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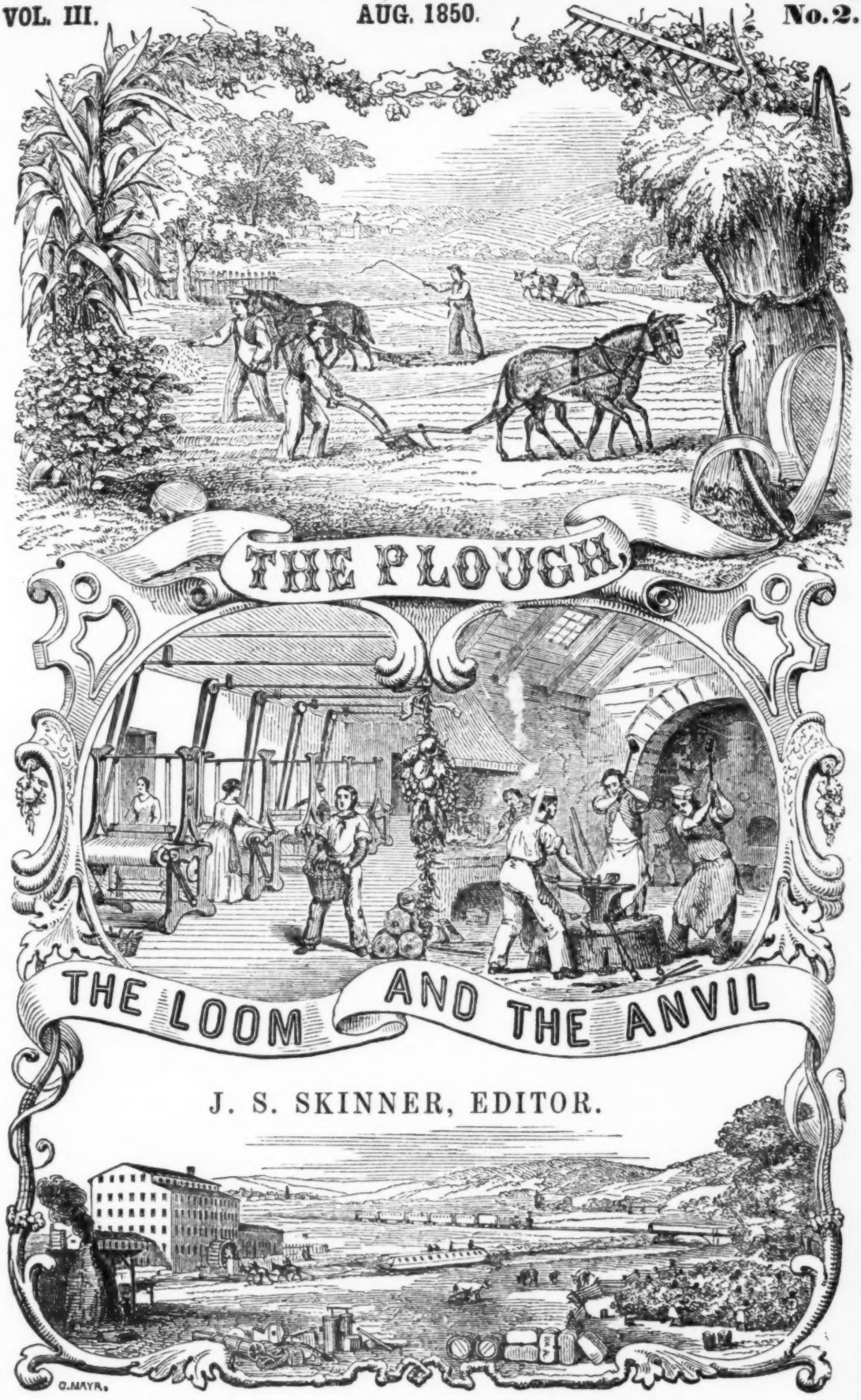

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☞ We have on hand a capital communication from the venerable Mr. Taliaferro, of Virginia, on the method of *making and bottling his far-famed crab apple cider*—but being compelled to get this number out sooner than usual, the whole of it was ready for the press before we received his answer—kind and prompt as he was in complying with our request.

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VOL. III. AUGUST, 1850. No. II.

THE HARMONY OF INTERESTS:

AGRICULTURAL, MANUFACTURING, AND COMMERCIAL.

BY H. C. CAREY.

HOW THE TARIFF POLICY AFFECTS LABOUR.

As the cost of manufactures consists in a great measure in the labour bestowed on them, every one desirous of arriving at the truth on the great question—how far a nation should protect its own labour against that of foreign countries,—will naturally desire to understand the question here discussed. In the following chapter the author of these letters has undertaken to point out the bearing of the tariff policy of a country on the various classes and employments of life; and, among others, on those whose personal labour supplies them with the means of subsistence. Can any class be more interested in thoroughly comprehending the subject, than the cultivators of the soil? for when they do not themselves perform the labour, they depend on those who do, and if they do not already perceive, it is high time they should, that labourers make good or worthless customers for the tillers of the soil, according as the return to labour is good or bad. But we are almost weary of attempts to reconcile farmers and planters to discussions like these, for careless or superficial indeed must be the reader who fails to see, that of all things, that which most concerns every producer, is to understand, and as far as he can, to improve beneficially, the laws that regulate demand and that bear upon the means of supply. He must have but a dull perception of his position and interests who needs to be repeatedly persuaded to study such subjects carefully for himself, or, would he rather be told again how long is the gestation of a cow? or how to cure a hog of the quinsy?—*Edit. P. L. & A.*

CHAPTER FIFTEENTH.

HOW PROTECTION AFFECTS THE LABOURER.

WHENEVER there is in market a surplus of any commodity, whether that surplus be the effect of natural or artificial causes, the price of the whole tends to fall to that at which the last portion can be sold—and whenever there is a deficiency, the price of the whole tends to rise to that point at which the last portion that is needed can be obtained. Labour is a commodity, the owners of which seek to exchange with other persons, giving it in the form of sugar or cotton, and receiving it in the form of cloth and iron, and, being such, it is subject to the same laws as all other commodities. So long as there shall be a surplus of it anywhere, the price everywhere tends to fall to the lowest level. With the diminution of the surplus anywhere, the price everywhere will tend to rise to a level with the highest.

Mere labour, unaided by machinery, can effect little. The man who has no axe cannot fell a tree, nor can he who has no spade dig the earth. The man who has no reaping-hook must pull up the grain, and he who has no horse or cart must transport his load upon his back. Such is the condition of the people of India, and such, nearly, is that of the people of Ireland. Labour is consequently unproductive, and its price is low.

To render labour productive, men require machinery, which is of three kinds, to wit: First, Machinery of *production*, consisting of lands that are cleared, drained, and otherwise fitted for the work of cultivation. Second, Machinery of *conversion*, as saw-mills, which convert logs into planks and boards; grist-mills, which convert wheat into flour; cotton and woollen-mills, which convert wool into cloth; and furnaces, which convert lime, fuel, and ore into iron. Third, Machinery of *transportation*, by aid of which the

man who raises food is enabled to place it where he can exchange it with the one who makes cloth or iron.

The two latter descriptions make no addition to the quantity of food or wool that is to be consumed. The wheat or cotton that goes into the mill comes out flour or cloth. The barrel of flour that goes into the ship comes out a barrel of flour, neither more nor less, and it will feed no more people when it comes out than when it went in.

The bushel of wheat that is sown comes out of the earth six, eight, or ten bushels, and the bushel of potatoes comes out twenty or thirty bushels. They have been placed in the machine of production, while the others have been placed in the machines of conversion or transportation.

The more labour that can be applied to the machine of production, the larger will be the supply of food and wool, and the larger will be the quantity of both that will be deemed the equivalent of a day's labour.

The nearer the place of conversion can be brought to the place of production, the less will be the necessity for transportation, the more steady will be the demand for labour throughout the year, the larger will be the quantity that may be given to the work of production, the better will the labourer be fed and clothed, and the more rapid will be the accumulation of wealth in the form of machinery to be used in the further increase of production.

Wealth tends to grow more rapidly than population, because better soils are brought into cultivation; and it does grow more rapidly whenever people abandon swords and muskets and take to spades and ploughs. Every increase in the ratio of wealth to population is attended with an increase in the power of the labourer as compared with that of landed or other capital. We all see that when ships are more abundant than passengers, the price of passage is low—and that when, on the contrary, passengers are more abundant than ships, the price is high. When ploughs and horses are more plenty than ploughmen, the latter fix the wages, but when ploughmen are more abundant than ploughs, the owners of the latter determine the distribution of the product of labour. When wealth increases rapidly, new soils are brought into cultivation, and more ploughmen are wanted. The demand for ploughs produces a demand for more men to mine coal and smelt iron ore, and the iron-master becomes a competitor for the employment of the labourer, who obtains a larger proportion of the constantly increasing return to labour. He wants clothes in greater abundance, and the manufacturer becomes a competitor with the iron-master and the farmer for his services. His proportion is again increased, and he wants sugar, and tea, and coffee, and now the ship-master competes with the manufacturer, the iron-master and the farmer: and thus with the growth of population and wealth there is produced a constantly increasing demand for labour; and its increased productiveness, and the consequently increased facility of accumulating wealth are followed necessarily and certainly by an increase of the labourer's proportion. His wages rise, and the *proportion* of the capitalist falls, yet now the latter accumulates fortune more rapidly than ever, and thus his interest and that of the labourer are in perfect harmony with each other. If we desire evidence of this, it is shown in the constantly increasing amount of the rental of England, derived from the appropriation of a constantly decreasing proportion of the product of the land: and in the enormous amount of railroad tolls compared with those of the turnpike: yet the railroad transports the farmer's wheat to market, and brings back sugar and coffee, taking not one-fourth as large a *proportion* for doing the business as was claimed by the owner of the wagon and horses, and him of the turnpike. The labourer's product is increased, and the proportion that goes to the capitalist is decreased. The power of the first over the product of his labour has grown, while that of the latter has diminished.

Look where we may, throughout this country, we shall find that where machinery of transportation is most needed, the quantity of labour that can be given to production is least, and the return to labour—or wages of the labourer in food, clothing, and other of the necessaries and comforts of life—is least: and that where transportation is least needed, the quantity of labour that can be given to production is greatest, and wages are highest: or in other words, that the nearer the consumer and the producer can be brought together the larger is the return to labour.

For forty years past the cultivation of cotton in India has been gradually receding from the lower lands towards the hills, producing a constantly increasing necessity for the means of transportation, and a constant diminution in the quantity of labour that could be applied to production. With each such step labour has been becoming more and more surplus, and the reward of labour has been steadily diminishing.

During a large portion of this period, such has been the case with Southern labour. It has been gradually receding from the lower lands of South Carolina and Georgia, producing a constant increase in the necessity for transportation, while the commodities to be transported would command in return a constantly decreasing measure of cloth, iron, and other of the necessaries of life. This tendency has been in some degree arrested by the large consumption at home, and by the power of applying labour to the culture of sugar; but were we now to change our revenue system, establishing perfect freedom of trade, the home manufacture of cotton and the home production of sugar must cease, and cotton wool would then fall to three cents per pound, for the planter would then be reduced to that as the only thing he could cultivate for sale. Labour would become more and more surplus, with a constant diminution of the power of the labourer to obtain either cloth or iron.

So has it been, and so must it continue to be, with the sugar and coffee planters. Their products yield them a constantly diminishing quantity of either cloth or iron, with constantly increasing difficulty of obtaining clothing or machinery in exchange for labour.

In New England, wages—*i. e.* the power to obtain food, clothing, and iron in exchange for labour—are high, but they tend to rise with every increase in the productiveness of Southern and Western labour, and so will they continue to do as Southern and Western men become manufacturers, because the latter will then have more to offer in exchange for labour. With any diminution in the productiveness of labour South or West, the wages of New England must fall, because there will then be less to offer them in exchange.

In England, the power to obtain food, clothing, or iron, for labour, is small, and it tends to diminish with every increase in the proportion of the population dependent upon transportation, and every diminution in the proportion that applies itself to production, because with each such step there is a necessity for greater exertion to underwork and supplant the Hindoo, whose annual wages even now are but six dollars, out of which he finds himself in food and clothing. With every step downwards, labour is more and more becoming surplus, as is seen from the growing anxiety to expel population, at almost any present sacrifice. Why it is so we may now inquire.

The great object of England is commerce.

Commerce among men tends to produce equality of condition, moral and physical. Whether it shall tend to raise or to depress the standard of condition, must depend upon the character of those with whom it is necessary that it should be maintained. The man who is compelled to associate with the idle, the dissolute, and the drunken, is likely to sink to the level of his companions.

So is it with labour. The necessity for depending on commerce with men

among whom the standard is low, tends to sink the labourer to the level of the lowest. Place half a dozen men on an island, two of whom are industrious and raise food, leaving it to the others, less disposed to work, to provide meat, fish, clothing, and shelter, and the industrious will be *compelled* to exchange with the idle. Clothing and shelter are as necessary as bread, and those who play will therefore profit by the labours of those who work. The latter, finding such to be the result, will cease to work with spirit, and by degrees all the members of the little community will become equally idle. Here lies the error of *communism* and *socialism*. They seek to compel union, and to force men to exchange with each other, the necessary effect of which is to sink the whole body to the level of those who are at the bottom.

So, too, is it with nations. The industrious community that raises food and is *dependent* on the idle one that makes iron must give much of the one for little of the other. The peaceful community that raises cotton and is *dependent* on the warlike one that raises silk, must give much cotton for little silk. Dependence on others for articles of necessity thus makes a community of goods, and the sober and industrious must help to support the idle and the dissolute—nations as well as individuals.

So long as this state of dependence exists, the condition of each is determined by that of the other. If the idle become more idle, and the dissolute more dissolute, those who still continue to work must steadily give more labour for less labour, and their condition must deteriorate unless they adopt such measures as shall gradually diminish and finally terminate their dependence on such companions.

The policy of England has tended to produce *communism* among nations. She has rendered herself dependent upon other communities for supplies of the articles of prime necessity, food and clothing, obtaining her rice from the wretched Hindoo, her corn from the Russian serf, and her wool from the Australian convict, neglecting her own rich soils that wait but the application of labour to become productive.

The necessary consequence of this is a tendency downwards in the condition of her people, and as it is with those of England that those of this country are invited to compete, it may not be amiss to show what is the condition to which they are now reduced by competition with the low-priced labour of Russia and of India.

The *Spectator*, a free-trade journal, informs us* that "the condition of the labouring classes engaged in agriculture, long an opprobrium to our advancement in civilization, has not improved; while wages exhibit *a universal tendency to decline beneath the lowest level of recent times.*"

The *Morning Chronicle* has recently given a series of letters from a correspondent specially deputed to inquire into the condition of the labouring classes in the agricultural counties, and by him we are informed that in Buckinghamshire and Oxfordshire the average wages of the year will not exceed 9/=$2·16 per week, while in Berks and Wiltshire they will not exceed 7/6=$1·79, and with this it is to be borne in mind that "when a poor wretch is prevented for a day, or even half a day, from working, his wages are stopped for the time." The wife sometimes works in the fields, and adds three shillings a week to the fund out of which these unfortunate people are to be subsisted, yet this gain is not without a drawback, as will be seen by those who may read the following account of the condition of the English agricultural labourer, in the middle of the nineteenth century, which, long as it is, will be found interesting:—

* November 12, 1849.

"When a married woman goes to the fields to work, she must leave her children at home. In many cases they are too young to be left by themselves, when they are generally left in charge of a young girl hired for the purpose. The sum paid to this vicarious mother, who is generally herself a mere child, is from 8*d.* to 1*s.* per week, in addition to which she is fed and lodged in the house. This is nearly equivalent to an addition of two more members to the family. If, therefore, the mother works in the fields for weekly wages equal to the maintenance of three children for the week, it is, in the first place, in many cases, at the cost of having two additional mouths to feed. But this is far from being all the disadvantages attending out-door labour by the mother. One of the worst features attending the system is the cheerlessness with which it invests the poor man's house. On returning from work, instead of finding his house in order and a meal comfortably prepared for him, his wife accompanies him home, or perhaps arrives after him, when all has to be done in his presence which should have been done for his reception. The result is, that home is made distasteful to him, and he hies to the nearest ale-house, where he soon spends the balance of his wife's earnings for the week, and also those of his children, if any of them have been at work. A great deal is lost also through the unthrifty habits of his wife. Her expertness at out-door labour has been acquired at the expense of an adequate knowledge of her in-door duties. She is an indifferent cook—a bad housewife in every respect. She is also in numerous instances lamentably deficient in knowledge of the most ordinary needle-work. All that she wants in these respects she might acquire, if she stayed more at home and was less in the fields. In addition to this, her children would have the benefit of being brought up under her own eye, instead of being, as they are, utterly neglected and left to themselves; for the party left in charge of them—and it is not always that any one is so—is generally herself a child, having no control whatever over them. It is under these circumstances that the seeds of future vice are plentifully sown. On the whole, as regards the system of married women working in the fields, I cannot, when the children are young, but look on the balance as being on the side of disadvantage. In that case I think it would be decidedly better for the poor man, having reference only to his physical comforts, that his wife stayed at home. And this is the position of many a labouring man. In many cases, when the family is large, some of the children are at work, adding their scanty wages of from 1*s.* 6*d.* to 2*s.* a week to the common fund. But I have known numerous cases of famllies of seven children, of which the eldest was not eight years old. Besides, when these are fit to work and earn wages of their own, his children soon become independent of him, and set up for themselves. This is in one way a relief to him, unless his family, while diminishing at one end, is increasing at the other. There can be no doubt but that a family is frequently aided by the earnings of the children, but in by far the greater number of cases the means of support are procured by the parents themselves. From what has been already said of the disadvantage to the whole family at which the wife bears her share in procuring them, it will be evident that the husband's earnings are, after all, the true test and standard of his own condition and that of those dependent upon him.

Moreover, in a very large proportion of cases, the wife remains at home, attending to duties more appropriate to her sex and position, in which case there is no other aid to be had, unless it be the trifling and fitful earnings of one or two of the children. We have seen that, in the counties in question, there are about 40,000 married couples, who, with their children, numbering about 120,000, depend exclusively upon agricultural labour for support. Of the 40,000 mothers, fully one-half stay at home, some being compelled to do so on account of the extreme youth of their children; and others, save when their families are somewhat advanced, preferring from calculation to do so, as being the best mode of turning their scanty means to good account. This may be taken as the case with half the married couples, who, with their families, will number about 100,000 individuals. So far, therefore, as these are concerned, the children, in about the same proportion of families, being too young to add any thing to the common stock, there is nothing else to adopt as the test of their condition and the standard of their comforts but the earnings of the husband. Let us inquire, therefore, into the condition of a family thus solely dependent upon such wages as the husband has, on the average, received during the past portion of the current year. I can best illustrate that condition by one of the numerous cases which came under my consideration in Wiltshire. The labourer in that case had had 8*s.* a week, but he was then only in receipt of 7*s.* He had seven children, the eldest of whom, a girl, was in her eighth year. Two of his children had been at a "dunce's school;" but they were not then attending it, simply because he could not afford the 4*d.* a week which had to be paid for their education. To ascertain how far he was really

incapable in this respect, I requested him to detail to me the economy of his household for a week, taking his earnings at 8*s*. The following is the substance of the conversation, discarding, for the reader's sake, the portions in which the names are given.

When are your wages paid?—On Saturday night, but often only once a fortnight.

What do you do with the money on receiving it?—I first lay by my rent, which is a shilling a week. I then go to the grocer's and lay in something for Sunday and the rest of the week. I buy a little tea, of which I get two ounces for 6*d*. Sugar is cheap, but I cannot afford it. We sometimes sweeten the tea with a little treacle, but generally drink it unsweetened.

Do you purchase any butcher meat?—Generally for a Sunday we buy a bit of bacon.

How much?—It is seldom that I can afford more than half a pound.

Half a pound among nine of you?—Yes; it is but a mere taste, but we have not even that the rest of the week. It costs me about 5*d*.

Do you buy your bread, or make it at home?—We buy it. We have not fire enough to make it at home, or it would be a great saving to us.

Do you buy a quantity at once, or a loaf when you need it?—We buy it as we need it.

Have you a garden attached to your cottage?—I have about fifteen poles, for which I pay 1½*d*. a pole. It is less than the eighth of an acre.

What do you raise from it?—We raise some potatoes and cabbages.

Do you raise a sufficient quantity of potatoes to serve you for the year?—No, not even if they were all sound.

In addition to the potatoes and the cabbages which you raise, how much bread do you require for your own support, and that of your wife and seven children for the week?—We require seven gallons of bread at least.

What is a gallon of bread?—It is a loaf which used to weigh 8 lbs. 11 oz., but which now seldom weighs above 8 lbs. Those who supply bread to the union seldom make it over 8 lbs.

What is the price of the gallon loaf?—Tenpence. It is cheaper than it was, but then there is not always so much of it. It is often of short weight.

Seven gallons of bread at 10*d*. a gallon would make 5*s*. 10*d*., would it not?—I believe it would make about that—you ought to know.

Do you always get seven gallons a week?—No, seldom more than six.

Then you spend 5*s*. in bread, and make up for the want of more by potatoes and cabbages?—Yes.

You have still some money left; what do you do with it?—It costs us something for washing. For soap and soda, and for needles and thread for mending, we pay about 5*d*. a week.

Do you buy fuel?—We get a cwt. of coal sometimes, which would cost us about 1*s*. or 1*s*. 1½*d*. if we took in any quantity and paid ready money. When we do neither it costs us about 1*s*. 4*d*. a cwt. If there is one poor man who can afford to buy it in any quantity for ready money, there are forty who cannot.

How long would a cwt. of coals serve you?—We make it last one way or another for two weeks.

Your fuel, therefore, will cost you about 8*d*. a week?—It will.

Is there any thing else you have?—We buy a little salt butter sometimes, which we can get from 6½*d*. to 10*d*. a pound. We are obliged, of course, to take the cheapest; "and really, sir, it is sometimes not hardly fit to grease a wagon with."

But your money is already all gone: how do you pay for your butter?—It is not always that we have it, and we can only have it by stinting ourselves in other things.

You have said nothing about your clothing: how do you procure that?—But for the high wages we get during the harvest time, we could not get it at all.

How long does the time last when you get high wages?—About ten weeks, and but for what we then get I do not know how we could get on at all.

From this recapitulation it must certainly appear a mystery to the reader how they get on as it is. The weekly expenditure, in our view, is as follows, the family being nine, and the weekly receipts 8*s*.:—

	s.	*d*.
Rent	1	0
Tea	0	6
Bacon	0	5
Bread	5	0
Soda, soap, &c.	0	5
Fuel	0	8
Total	8	0

The provision for clothing is in the extra wages paid at harvest time, while the family cannot be treated to the luxury of bad butter without sacrificing the tea, two ounces of which must serve for a week, the half pound of bacon, which affords but a "mere taste" on Sunday to each; some of the bread which is already but too scantily supplied; or a portion of their fuel, the absence of which renders their home still more cheerless and desolate. Sugar, too, is out of the question, without trenching upon items more absolutely necessary. Nor is there any reserved fund for medicines, too often required by a family of nine thus miserably circumstanced. What, in short, have we here? We have nine people subsisting for seven days upon 60 lbs. of bread—scarcely a pound a day for each, half a pound of bacon, and two ounces of tea, the rest being made up by a provision, too scanty in nine cases out of ten, of potatoes and cabbages raised in the garden. Could they descend much lower in the scale of wretchedness, especially when we couple with their stinted supply of the less nutritious kinds of food the miserable hovels in which it is taken by them, either shivering in the winter's frosts, or inhaling the pestilential odours engendered around them by the summer heats?

I could no longer express any surprise at 4*d.* a week being grudged for the education of two children.

This being the mode in which his weekly wages were expended, I asked the same individual to give me an account of his daily life, including his labour and fare. In reply to my questions on this point he answered, in substance, as follows:—

At what hour do you go to work?—At six in the morning, generally, in summer; but I have gone much earlier. In winter time work begins at a later hour.

Do you breakfast at home?—When I do not go out very early I generally do.

Of what does your breakfast consist?—Principally of bread, and sometimes a little tea. Sometimes, too, we have a few potatoes boiled.

When do you dine?—About twelve.

Of what does your dinner consist?—On the Monday my wife gets a little flour and makes a pudding, which, with a few potatoes, forms my dinner. Sometimes we have a pudding on other days, but generally our dinner is bread and potatoes, with now and then a little cabbage. When the family is not large, there may be a bit of bacon left that has not been used on Sunday, but that is never the case with us.

You return to work again?—I do, and when I come home at night may have a little tea again, with the bread which forms my supper. The tea is never strong with us, but at night it is very weak.

Do your children get tea?—We have not enough for that.

What is their drink?—Water; sometimes we get them a little milk.

What is your own drink?—Water.

Do you never drink beer?—Never, but when it is given me; I can't afford to buy it.

When your dinner consists of bread, potatoes, and water, have you nothing to season it or make it palatable?—Nothing but a little salt butter; and we can only afford that when the bread or potatoes happen not to be very good, or when we are ailing, and our stomachs are a little dainty.

When your bread or potatoes are bad, or your stomachs are dainty, you take as a relish the butter which you said was scarcely fit to grease a wagon with?—We have nothing better to take.

Suppose you had nothing but bread to eat, how much would you require to sustain you at work in the course of a day?—Two pounds at least.

And how much would one of your children require?—About the same. A child, although not at work, will eat as much as a man; children are always growing, and always ready to eat, and one does not like to refuse food to them when they want it. I would sooner go without myself than stint my children, if I could help it.

Then, at the rate of two pounds a day for each, you would require for all about 126 lbs. for the week?—I suppose about that.

And, as you only get about sixty pounds of bread a week, you have to rely on your potatoes and cabbages, your half pound of bacon, and two ounces of tea, to make up for the sixty-six pounds which you cannot get?—We have nothing else to rely on.

Have you enough of these to afford you as much nourishment as there would be in sixty-six pounds of bread?—Not nearly enough.

Is what you have stated your manner of living from week to week?—It is when I have work.

And when you have not work, how is it with you?—In the winter months we have sometimes scarcely a bit to put in our mouths.

Such is the substance of the statement, as regards his own and his family's circumstances, made to me by a labouring man in the receipt of the average rate of wages for the last nine months in Wiltshire. Comment is scarcely needed, the facts speaking but too plainly for themselves. Had the family been smaller, or the wages a little higher, instead of a "taste," they might have had a meal of bacon once a week. But even then it would be but once a week, potatoes and bread still constituting the staple of their diet, and even these not being had by them in sufficient quantity. Besides, even if they had it more frequently, bacon is not the most nourishing food in the shape of butcher meat; it is fat, and goes to fat. The little lean that is in it is almost destroyed by the process of curing. But it is greasy, and soon satisfies. "It fills us sooner than any other kind of meat," was the reply given to me when I asked why they preferred it to beef? But the fault is that it does not fill them; it satiates, without filling them. Bulk is required as well as nutriment in food. The stomach has a mechanical as well as a chemical action to perform. A man could not live on cheese, nor could he exist on pills having in them the concentrated essence of beef. They buy bacon because it goes a longer way than other meat—in truth, they buy it because it soon cloys them. Nor is it always that they have even a "taste" of it once a week. I have seen several families who had not tasted butcher meat of any kind for weeks at a time. When French and English workmen came together during the construction of some of the French railways, it was found that the Englishman could perform far more work than his French competitor. This was universally attributed to the superiority of his diet, it being supposed but reasonable on all hands to expect more work from the man who fed on beef and porter than from him whose fare was bread and grapes. But the fare of the man who is expected by his labour to develope, year after year, the agricultural wealth of England, is, in a large proportion of cases, little better than bread and water—the fare of the condemned cell! Contrast the condition of the English farm labourer with that of the farm labourer in Canada. In England he eats butcher-meat once a week, and not always that; in Canada he has as much of it as he wants once, at least, and frequently twice a day. Contrast his condition even with that of the slave in the Southern States of America. In Virginia, the great slave State, it is seldom that a day passes without the slave eating butcher-meat of some kind or other. In addition to this, when he is old and infirm, he has a claim on his master for support. But the English labourer, if he has a family to sustain, has not, even during the days of his strength, when he can do, and does work, the same nutritious diet as the slave; while, when he is disabled, or loses his work, he must starve, or, as the alternative, become a vagrant, or the recipient of a formal and organized charity. In the words of one of themselves, "it is not a living, sir—it is a mere being we get;" by which he intended to convey that their reward for their toil was their being barely enabled to exist.

It may be said that the case put is an extreme one. It is the case, however, of nearly one-half of those who are dependent upon labour in the fields. But it may be said that I have omitted to take into account some little privileges which the labourer has, and which, when he avails himself of them, tend to enhance his comforts. He may keep a pig, for instance, and his employer will sometimes find him straw for it, which, in process of time, will serve as manure for his little garden. This looks very well on paper, but that is chiefly all. In the four counties under consideration the number of labourers keeping pigs is about one in twelve. It is also a striking illustration of the condition of the labourers, that even such of them as do feed a pig seldom participate in the eating of it. Then we hear a great deal about the coal and clothing clubs, to which I shall hereafter more particularly advert, and the chief merit of which is that they tend to render life not pleasant, but barely tolerable to the poor."

The sleeping accommodations are thus described:—

"These are above, and are gained by means of a few greasy and rickety steps, which lead through a species of hatchway in the ceiling. Yes, there is but one room, and yet we counted nine in the family! And such a room! The small window in the roof admits just light enough to enable you to discern its character and dimensions. The rafters, which are all exposed, spring from the very floor, so that it is only in the very centre of the apartment that you have any chance of standing erect. The thatch oozes through the wood-work which supports it, the whole being begrimed with smoke and dust, and replete with vermin. There are no cobwebs, for the spider only spreads his net where flies are likely to be caught. You look in vain for a bedstead; there is none in the room. But there are their beds, lying side by side on the floor, almost in contact

with each other, and occupying nearly the whole length of the apartment. The beds are large sacks, filled with the chaff of oats, which the labourer sometimes gets and at others purchases from his employer. The chaff of wheat and barley is used on the farm for other purposes. The bed next the hatchway is that of the father and mother, with whom sleeps the infant, born but a few months ago in this very room. In the other beds sleep the children, the boys and girls together. The eldest girl is in her twelfth year, the eldest boy having nearly completed his eleventh; and they are likely to remain for years yet in the circumstances in which we now find them. With the exception of the youngest children, the family retire to rest about the same hour, generally undressing below, and then ascending and crawling over each other to their respective resting-places for the night. There are two blankets on the bed occupied by the parents, the others being covered with a very heterogeneous assemblage of materials. It not unfrequently happens that the clothes worn by the parents in the day time form the chief part of the covering of the children by night. Such is the dormitory in which, lying side by side, the nine whom we have just left below at their wretched meal will pass the night. The sole ventilation is through the small aperture occupied by what is termed, by courtesy, a window. In other words, there is scarcely any ventilation at all. What a den in the hour of sickness or death! What a den, indeed, at any time! And yet when the sable goddess stretches forth her leaden sceptre over the soft downy couch in Mayfair, such are the circumstances in which, in our rural parishes, she leaves a portion of her slumbering domain.

Let it not be said that this picture is overdrawn, or that it is a concentration, for effect, into one point, of effects spread in reality over a large surface. As a type of the extreme of domiciliary wretchedness in the rural districts, it is underdrawn. The cottage in question has two rooms. Some have only one, with as great a number of inmates to occupy it. Some of them, again, have three or four rooms, with a family occupying each room; the families so circumstanced amounting each, in some cases, to nine or ten individuals. In some cottages, too, a lodger is accommodated, who occupies the same apartment as the family. Such, fortunately, is not the condition of all the labourers in the agricultural districts; but it is the condition of a very great number of Englishmen—not in the backwoods of a remote settlement, but in the heart of Anglo-Saxon civilization, in the year of grace 1849."

Bad, however, as is all this, it is likely to be worse. Everywhere, notices are being given of a reduction of wages, and diminution in the number of persons to be employed. There is scarcely, says the writer, a district in any of these counties "where the work of reducing wages has not already commenced." In one of them, as early as last June, there was a reduction from 8*s.* to 7*s.*, and "apprehensions are everywhere entertained that they will be reduced to 6*s.* = $1·44." "Is it any wonder," he adds, "that, with such a prospect before them, the agricultural labourers should brood over their circumstances with the ominous sullenness of despair? What is that prospect? The winter is approaching—the season when most is required by us all to administer to our comforts. They are entering upon that season with here 8*s.*, there 6*s.*, and there again but 5*s.* a week for the support of their families. How far will these pitiful portions go in households of five, six, seven, eight, nine, or ten individuals? We cannot, in estimating a labourer's comforts at any given time, apply to them the test of his average wages. It is his wages for the time being that decide the measure of his condition. Had he at any time more than was necessary to carry him and his family up to the line of comfort, he might lay by the surplus for adverse times. But he never has what secures him perfect comfort, and is always more than tempted to spend all he gets. He therefore commences this winter, as he does every winter, without any reserve-fund to fall back upon; and the fact is appalling that, in this month of October, thousands of families in the very heart of England have no better prospect before them than that of living on 8*s.*, 6*s.*, and even 5*s.* a week, in their cold, damp, cheerless, and unhealthy homes."

The Canadian farmer is invited to contend in the market of England with the serf of Russia for the privilege of supplying with food men to whom a

morsel of bacon on a Sunday is a luxury, when by the simple process of annexation and protection he could bring to his side the same men and convert them into large and valuable customers. The planter is invited to contend in the market of England for the privilege of clothing men who want means to buy bread, when by an exercise of his will he could bring to his side, annually, millions of the same men, each of whom would then require twenty pounds a year, two millions consuming half as much as was consumed in 1847 by almost thirty millions of the people of England and Wales.

The system of England demands that with such people as these we shall establish a community of goods. Were it allowed free play—were the people of the world to establish what is called free trade, and thus unite their efforts for the maintenance of *the monopoly system*, wages universally would fall to the level of those of the poorest countries of the world, for with every step those of England would, of necessity, fall, because they must be kept at that point which would enable her people to underwork the world, and the tendency everywhere would be, as it has been in Ireland and India, downward. The adoption of perfect free trade by this country would, for a short time, produce some activity there, but a very short period would prove that we bought far less under free trade than we had done with protection, and in the mean time the disproportion of the English population would have largely increased, and the difficulty would be then far greater than it is now, great even as it is. We now *pay for* far less merchandise than we did three years since, and were it not that we are still able to buy on credit, we should make smaller demands on England than we have done at any period since 1842. The greater the amount of capital thus lent to us, the lower must fall the condition of the English labourer. Every step now being made by England is a step downwards, and if we would not have our labourers reduced to a level with hers we must, by protection, endeavour to raise hers to a level with ours, as it will do by relieving us from the necessity for *dependence* upon commerce with a people whose labour is lower in the scale than our own. It tends to raise the value of man abroad and at home, and to enable all to obtain *more* food, fuel, and clothing with *less* labour. Under it immigration has always increased, and it has declined with its diminution. That it must tend to raise wages abroad is obvious from the fact that so many hundreds of thousands of the population of Europe, held to be surplus, have sought our shores, thus diminishing the quantity of labour seeking there to be employed.

With the approach to what is called freedom of trade, that system which tends to the maintenance of the monopoly of machinery in England, the value of labour here is falling towards the level of that of England. The present diminished production of coal and iron is maintained only by aid of a great diminution of wages. Labour is becoming surplus, and immigration is already falling off. This year will show a large diminution therein, and every step in that direction must be attended with a rise of freights tending to diminish the power to export either food or cotton. With the diminution of wages at the North, there is already a diminished power to consume either food or clothing, with increase in the surplus that is to be sent. Thus the same measures that increase the *necessity* for depending on machinery of transportation diminish the *power* to obtain it, to the deterioration of the condition of the whole body of the people, labourers and capitalists, farmers and planters, manufacturers and ship-owners; and the same which tend to diminish our necessities for depending thereon, tend to increase our power to obtain it, to diminish the burden now pressing upon the land-owners and labourers of Europe, and to bring about that state of things which shall give to us and them perfect freedom of trade. The harmony of all interests, whether individual or national, becomes more and more obvious the more the subject is examined.

It may not be uninstructive to review the last few years, with special reference to the discords that have occasionally been seen to exist between the employers and the employed, accompanied by strikes, combinations, &c., with a view to show their cause.

It is within the recollection of most of my readers that the years from 1836 to 1839 were distinguished for disturbances of this kind. The cause is obvious. Production was diminishing, and the labourer found himself unable to obtain the quantity of food, fuel, and clothing to which he had been accustomed. He desired a rise of money-wages to meet the rise in the price of food, but the employer could not give it, and hence arose combinations for the purpose of compelling him to do so.

From 1844 to 1848, harmony was restored, because production increased, and the labourer found that each year enabled him to obtain more food and clothing, and better shelter, with the same labour.

The last year has been marked by a succession of combinations. In the coal region of Pennsylvania, at Pittsburgh, Lowell, and various other places, there have been strikes and turn-outs, some of them long-continued; and everywhere there have been clamours for the passage of laws restricting the hours of labour; but those who thus clamoured desired that wages should remain as they were. These things all result from the one great fact that the productiveness of labour is diminishing, and that wages are tending towards the European level.

To that cause was due the jealousy of foreigners which gave rise to the "native" party. In 1842, employment was almost unattainable, and the native workmen were indisposed to divide with strangers the little that was to be had. With the increased productiveness of labour wages rose, and the "native" party almost died out, while the import of foreigners was quadrupled. If the system of 1846 be continued, the same jealousy will re-appear, and foreigners will be proscribed, while immigration will be diminished.

It is to the interest of the native workmen that the wages of Europe should be brought up to a level with our own, and the only way in which that can be accomplished is for us to pursue a course that shall tend to render it the interest of every man in Europe that can find means to pay his passage to endeavour to reach our shores. Every one that comes will be a producer of something, and every one therefore a customer to others for their products. Look where we may, there is the most perfect harmony of interest.

MAKING OF CHESHIRE CHEESE. (*Prize Essay.*) By Henry White.

It has sometimes been a matter of dispute among Englishmen which particular county or district is the most famous for the making of cheese. I think, if quantity is to be taken into account as well as quality, the decision must be in favour of Cheshire, as there cannot be less, upon a moderate calculation, than 12,000 tons made in that county annually; a considerable portion of which is of excellent quality.

There is reason for believing that cheese has been made in Cheshire for at least 700 years:* and, from allusions made to cheese and to curd in the Old Testament,† it is evident that an article of this nature must have been known and used at a very early period.

* "The fame of the cheeses of Cheshire is of very ancient date: at least as old as the reign of Henry I. (A. D. 1100.) The Countess Constance of Chester, though the wife of Hugh Lupus, the king's first cousin, kept a herd of kine, and made good cheeses, three of which she presented to the Archbishop of Canterbury. Giraldus Cambrensis bears honourable testimony to the excellence of the Cheshire cheeses of the day."—(*Bell's Weekly Messenger, Feb.* 22, 1841.) "Poor men eat cheese for hunger, rich for digestion. It seems that the ancient British had no skill in the making thereof, till taught by the Romans, and now the Romans may even learn of us more exactness therein. The county of Chester doth afford the best for quantity and quality; and yet their cows are not (as in other shires) housed in the winter; so that it may seem strange, that the hardiest kine should yield the tenderest cheese. Some essayed in vain to make the like in other places, though hence they fetched both their kine and dairy-maids. It seems they should have fetched their ground too, (wherein surely some occult excellency in this kind,) or else so good cheese will not be made. I here not the like commendation of the butter in this county; and perchance these two commodities are like stars of a different horizon, so that the elevation of the one to eminency is the depression of the other."—*Fuller's Worthies.*

† 1 Sam. xvii. 18; 2 Sam. xvii. 29; Job x. 10.

It is scarcely necessary to premise that milk, from which cheese is made, consists of three distinct parts—*cream*, *curd*, and *whey*—into which, by repose, it spontaneously separates; but the process of separating the whey from the other bodies may, as in cheese-making, be accelerated by infusing a small quantity of a simple acid extracted from cured and dried maw-skins,* which have been previously dissolved in warm water. This infusion is commonly called "steep," but more properly *rennet*.

The art of cheese-making consists in the complete extraction of the whey and in the proper compacting and curing of the curd. The richness of the cheese depends upon the quality of the milk, or, in other words, on the proportion of cream which the milk contains. The cheese of Cheshire is professedly made from new milk, or milk from which no cream has been taken.—It is, however, well known, that in many dairies, in the morning before cheese making, a small quantity of cream is skimmed off the previous evening's milk; this cream is either churned by itself, or mixed with whey-cream, by which there is obtained a better quality and greater quantity of (so-called) whey-butter. It may appear singular to some, that any portion of cream should be found in whey, but such is the fact, and the means used in Cheshire for extracting it are very simple *(See Appendix.)*

Before entering into a detailed description of the mode employed in Cheshire in the making of cheese, I would remark that this Essay is founded upon my own observations, made during a fifteen years' residence in, and intimate connexion with, that county; which latter is still existing. I have long felt an interest in the subject of cheese-making, with a desire to see it conducted upon more scientific principles, from a conviction that, were such the case, both the pocket of the producer and the stomach of the consumer would often be more agreeably filled: but I do not wish it to be supposed from this remark that I profess myself conversant with these principles: my information being more of a practical nature, and as such I offer it to the Society.

Number of Cows kept, and Produce.—The number of cows kept for the purposes of a cheese *dairy* is seldom less than 8 or 10, or more than 70 or 80; and is of course regulated by the size of the farms—these average about 90 or 100 statute acres, upon each of which about 15 or 18 cows are kept. From 18 cows, a cheese of from 36 lbs. to 54 lbs. weight is made daily during four or five months of the summer.† The annual produce of cheese per cow depends both upon the quality of the animal (with the mode of keeping her) and of the *land*, or rather the *herbage*. I have known many farmers sustain great loss by not feeding their cattle sufficiently well in winter. With judicious management, about 3 cwt. of cheese (of 112 lbs.) may be considered as the average amount made per annum upon land let for 30*s*. [$7 50 annual rent] a statute acre; but in a few instances 5 cwt. per cow, and even more, is sometimes made. This can only be from a small and choice stock.

The Season.—It is the practice amongst farmers in this county to arrange so as to have most of their cows calving in the months of March and April; and so soon as the calves are fed or disposed of, the cheese-making commences, and continues (excepting in small dairies) to nearly the end of the year. In January and February the quantity of milk obtained is often so small that the farmer prefers selling it in the neighboring towns or making it into butter. There are, however, instances, in large dairies (of 70 or 80 cows), of cheese being made throughout the year.

Milking.—The operation commences about five o'clock in the morning, and five or six in the evening. In this county it is the practice for most of the servants, both men and maids, to assist, and for the cows to be milked in the cow-houses (called here "shippons") all the year round. When, as is usual, there is one milker for every six or seven cows, the milking seldom exceeds an hour and a quarter.*

The milk of new-calved cows is not mixed with the other until about four or five days after calving.

Offices and Utensils.—As the evening's milk is seldom made into cheese until the following morning, and sometimes in small dairies (where four "meals" are used) not until the second morning, a cool "milk-house" is necessary; on which account it usually occupies that side of the farm-house least exposed to the sun. The utensils in which the milk is kept are usually portable shallow earthenware vessels called "pan-mugs," and in some dairies leaden or zinc coolers. Most of the milk-rooms have lattice or wire windows for the circulation of air, and the floors are laid in a sloping form for the free escape of the cold water with which they are daily swilled throughout the summer months. If precautions of this nature be not attended to, there is a risk of the evening's milk becoming *sour*; in which case, whatever quantity of new milk be added to it in the morning, the cheese will be *sour* also. I am led to believe that a temperature of as near 50° Fahrenheit as could be maintained, would be best for a milk-house throughout the year.—The *dairy* is generally situate near the milk-house, and fitted up with two *set-pans* or *boilers*† —a large one for scalding the whey, and a smaller one for heating water. The "cheese-presses" and "screw" are kept within this room, and the operation of cheese-making is here carried on. Some farm-houses are not provided with a *dairy*, and the cheese is then made in the *kitchen*—this is commonly the case on small farms. The "salting and drying-house" (often one and the same room), if conveniently situated, adjoins the dairy. The cheese is placed here on stone or wooden benches, salted *externally*, and is afterwards left so as to dry gradually before being removed to the cheese-room. By some dairy-maids, this external salting is dispensed with, and the room is then of

* The *stomachs of sucking calves*. See the method of curing these in the Appendix.

† The Marquess of Cholmondeley and Mr. Tollemache, M. P., with a laudable desire to encourage the suspension of Sunday labor, have, for several years, offered through the South Cheshire Agricultural Society a prize of £20 to such farmer as shall have made the best cheese without infringing on the Sabbath rest. Although this prize has, I believe, been regularly claimed, yet, from a variety of causes, the practice of making cheese on the Sabbath, as on other days, is still very general.

* I was told by an apparently very respectable man, at Saratoga Springs last week, that he knew a New-York farmer, worth more than $200,000, whose daughters milked the cows regularly.

† South of New-Jersey, milk-house and dairy are synonymous.

course only used for *drying*. These offices are all on the ground-floor. In some cases the cheese-room is over the dairy, in others over the kitchen, or some other room wherein a fire is usually kept, and sometimes, though rarely, over the *cow-houses* or *stables*. Light and air are invariably excluded, either by a curtain or shutters.* The floor is either of plaster (gypsum) or boards, but more commonly the latter; some of the larger cheese-rooms are warmed by stoves, or hot air, and occasionally, though rarely, by fire-places in the room itself. The small cheese-rooms are seldom supplied with artificial heat, except what is gained from the rooms below.—Some cheese-rooms are occasionally found to be in the summer time too warm, in which case the cheese has to be removed for a time to a cooler part of the house. This is more generally necessary where the building is slated, and exposed to the noon-day sun; but is seldom or never experienced where the roof is of thatch. The size of these offices is of course regulated by the extent of the farm; where 30 cows are kept I find them nearly as follows:

	Yds.	Yds.		Sq.Yds.
Milk-house	6 by	3	or about	18
Dairy	6 by	5	"	30
Salting and drying-house	4 by	5	"	20
Cheese-room over dairy and drying-house	10 by	5 (or 8 by 6)	"	50

The utensils, excepting those I have described, will be noticed hereafter.

Process of Cheese-making.—As the first process—namely, that of extracting the whey and salting—occupies, according to circumstances, from five to seven hours, it is found most convenient to commence it in the morning. This being the case, the evening's milk has to be kept all night in the milk-house. In the morning, the cream having been skimmed off, a portion of this milk is warmed. This is done in a circular flat-bottomed brass or tin pan, (see *a*, fig. 4,) floated in the boiler, the water of which has been previously heated for that purpose: the size of this pan is about 20 inches in diameter and 8 inches deep. The quantity to be warmed depends upon the state of the weather; for the first two or three months of the season (say March, April and May) it is not unusual to heat as much as half the evening's milk to a temperature of 100° Fahrenheit, and this heat is rarely exceeded, excepting by those dairymaids who wish to save themselves trouble in the after process. The "cheese-tub," which is similar to a brewing-tub, having been placed in readiness in the dairy, the cold milk is now put in and the warm added. Supposing the temperature of the cold milk to be about 50°, and the warm 100°, and they were in equal proportions, the heat after mixing would be 75°, or something less; but in warm weather it will be sufficient if it reaches 70°. I have known instances of good cheese being made in summer without warming any portion of the evening's milk—indeed, such now is becoming the general practice. In very warm weather some dairy-maids think it necessary to reduce even the temperature of the morning's milk. The *cream*, which is diluted either in about double its quantity of warm or new milk, or by being exposed to the heat of the boiler in the same way as the milk, is next put in. I have before stated that it is customary to retain a small part of the cream for butter: when this is the case, it is considered best to skim it off the whole surface of the cream before diluting, as by that means the froth and bubbles, which are supposed to be prejudicial to the cheese, will, for the most part, be taken off. This leads me to the conclusion that *fixed air*, if it gets mixed in the curd, has been found to be detrimental. Since warming of fluids has a tendency to dispel this fixed air, it is perhaps worthy of consideration whether it would not be better to warm the *whole* of the evening's milk to the required temperature, rather than heating a *part* of it so high as 100°. The process adopted with the evening's milk, as above described, is generally finished previous to the time of milking in the morning; but if not, the dairymaid stops and completes it before the *new* milk is brought in from the cows. This new or morning's milk is then added by passing it through a *sieve* placed upon the "cheese-ladder" over the cheese-tub. When the whole is thus collected, some few bubbles are invariably found floating on the surface; these are skimmed off and passed through the sieve to break them.

One of the most important points now to be attended to is the heat of the milk preparatory to coagulation, as the milk, if at a proper temperature, should now be ready to "set together," that is, to receive the rennet. This heat is rarely tested by any other thermometer than that of the dairymaid's hand; some may, and I have no doubt do, determine it pretty correctly, but cannot always.

In consequence of the changes in the weather it is difficult even for an experienced dairymaid to know at all times what proportion of the evening's milk should be warmed; she is therefore cautious not to warm too much, until the morning's milk is added and the consequent heat ascertained. If it be deemed too cool, a little of the evening's milk which has been reserved is then warmed, so as to produce the heat required; but when none has been reserved, the necessary quantity taken from the tub after the admixture of the two milkings is warmed for that purpose. Little is known amongst the farmers or dairymaids as to the *precise heat* which is best. I have seldom heard the subject named, except by a vague comparison, that such and such dairies were made *colder* or *warmer* than others. I am acquainted with some farmers whose wives are said to have a peculiar method of their own, and who, I believe, obtain a high price for their cheese in the Manchester market, chiefly from the tendency of the cheese to green mould. I know little of the system which these parties adopt, but I understand they make their cheese "cold"—that is, set the milk together at a low temperature; and I am also inclined to think they use less salt than others. I have not solicited the *privilege* of prying into the *mysteries* pursued in these dairies, nor could I expect to have been so indulged if I had, especially if they had supposed it was for publication. It is said these parties get a greater price for their cheese than many of their neighbors, which I have no reason to doubt; and I think, from what I have seen, they make quite as great a quantity per cow. But the *real* price obtained, and the *precise* quantity made in any particular dairy, is seldom known beyond the farmer's own family and the factor.

I ought, perhaps, to state that I have tasted some of these cheeses, and find them generally very good, fair toasters, and without coloring;

* One reason, amongst others, assigned for this (universal) practice, is its tendency to prevent the mischievous effects of the fly.

but in some I have detected a slight sourness: from this cause, or, what is more probable, from too little salt being used, the cheese will not keep long before decomposition takes place.—To the farmer this would only be of consequence in the event of his not being able to sell the article at the time he wished. In the dairies where I have been permitted to take observations, the lowest heat of setting the milk together was 77°. I am disposed to think those who make a so-called *cold cheese* do not adopt much lower temperatures, even in summer, than 74° or 75°; since a much longer time would be occupied in gathering and compacting the curd, and considerable risk incurred of having what is termed a *sour cheese*.

The evening's milk in the tub being at or about 75°, as before stated, and the milk which is brought from the cows 90° or 95°, the temperature of the whole is then found to be somewhere between 80° and 85°; and I am of opinion that the heat at which milk ought to be and is commonly coagulated, ranges between those two temperatures.*

When *coloring* is used, which is not so extensively the case as formerly, it is put into the milk immediately before the rennet. The nature of the article used for this purpose I propose to investigate under a distinct head in the Appendix. The *quantity* of coloring is in some degree regulated by the quality of the milk: if a considerable portion of the cream of the evening's milk has been taken out for making butter, a greater quantity of this coloring matter will be required to give the cheese that appearance which is found necessary to please the *eye* of the consumer, and particularly of those residing in London or at a distance. *Annatto* (or, rather, a coloring matter which *goes by that name*) is the article used; 1 lb. of it for each ton of cheese is a moderate calculation; this would be after the rate of half an ounce to 75 lbs.† The present retail price of the "best *real* Spanish Annatto" is 4s. per lb. The coloring is prepared and applied in different ways, but the most common is to take a piece of the requisite size, to fold it in a small bit of linen, and put it in half or a quarter of a pint of warm water the previous night. By this means it gets sufficiently dissolved. When the infusion is poured into the milk, the linen bag containing it is dipped in, and rubbed betwixt the fingers until the coloring is all discharged. The dregs, if any, remain in the bag.

The *rennet*, or *steep* as it is commonly called, is next added. I have already stated, in the introduction, that this is an infusion made from the preserved stomach or maw of sucking calves, thence called *maw-skins* or *bag-skins*. A recipe for preserving the skins will be found in the Appendix. To define the quantity of rennet sufficient for coagulating a given quantity of milk, is a very difficult matter, as the maw-skins vary so much in quality. When the farmer is laying in a stock for the year, he generally calculates upon a dozen of skins to a ton of cheese; but the skins vary in size, (the price when cured is from 6s. to 9s. per dozen.) In using them, it is the practice often to cut two skins at once. Three square inches taken from the *bottom* (or strongest part) of one, and one or two inches from the top (or weakest part) of the other, is generally found sufficient for sixty gallons of milk. These two pieces of skin are put into a cup containing about half a pint of lukewarm water, with the addition of a tea-spoonful of salt, some part of the day previous to being used. The water thus impregnated with the maw-skin is passed through the sieve into the milk, but the skin itself is generally, though not always, kept out. The rennet-cup is well *scalded* before being used again. I have been told that some farmers make a sufficiently large quantity of rennet to last for several weeks, and find it to answer better than making a small quantity daily. The question is, will it keep *sweet?*

The coloring and rennet having been put in, the milk is well stirred and left to coagulate. It is usual to invert the skimming-dish on the surface of the milk—a practice of doubtful propriety, for this reason, that the curd immediately under it does not attain the same adhesiveness as the other, and is one of the causes of what is commonly called *slip curd*. The tub is now covered up, either with a wooden lid, or with cloths supported by the "cheese ladder;" these assist in preserving the heat of the milk, and protect it from dust and dirt.

The coagulation (or "coming") is generally effected in an hour or an hour and a half. As far as my own observations extend, I am led to think that an average of these two is sufficiently long, if the proper means are used in effecting the formation of the curd: for it is well known that, *cæteris paribus*, the warmer the milk is at the time of setting together, or the stronger the rennet, the sooner will the coagulation take place, but the curd will in consequence be tougher and less in quantity; on the contrary, the cooler the milk, or the weaker the rennet, the longer will the curd be in forming, and the more tender its quality, but its quantity will be greater. By attention to these results the cheese-maker may soon decide when too much or too little rennet has been put in the milk, and correct the quantity the next time. It may be proper here to state that too much rennet has a tendency to impart an unpleasant flavor, or bitterness, to the cheese.

It may generally be expected that the heat of the curd when formed will be four or five degrees less than the milk was when set together; and it is desirable, particularly in cool weather, that this difference should not be greater, otherwise the subsequent labor will be more difficult. To determine exactly when the *curd* is in a fit state for what is called "breaking," requires some practical knowledge; with attention this is soon acquired. The point is generally determined by gently pressing the surface of the milk with the back of the hand, or by lifting up the skimming-dish, beneath which the curd and whey will distinctly appear if the coagulation is complete. Another criterion is the color of the whey, which should be of a pale green.

The "breaking" and "gathering" of the curd

* Since writing the above, I have met with a farmer in Eddisbury Hundred, who says he used the thermometer during the year 1841 for the first time, and that the heat he uniformly adopted was 84°. I also found a thermometer at another dairy near to this, but it was not in use. I was allowed to test the heat of the milk with it, and found it 78°; this was in *June*. The precise heat at which milk ought to be coagulated is a matter of vital importance in cheese-making, and can only be ascertained by a series of careful and judicious experiments made by scientific and practical parties.

† The juice of the yellow carrot and the flower of Marygold are also used for coloring Cheese.

is the next process. This used formerly to be done by means of the hands and skimming-dish (a practice still continued in some dairies); but the *curd-breaker* is now generally made use of for this purpose (see Fig. 1). It is made of wire-work, in an oval form, and has a tin rim round it about an inch and a half broad. This wire-work cuts the curd, by being passed through it perpendicularly *very, very* gently at first, and in different directions, so that the whole mass is separated into very small portions. The length of time required for the operation depends upon the quantity of curd: for a 60 pound cheese the operation often takes twenty or twenty-five minutes. After this the curd is left for a quarter of an hour to separate from the whey, and, if the weather be cool, the tub is covered to retain the heat. The curd having separated, which it does by sinking, a portion of the whey at the top is then taken out by the portable brass or tin pan before alluded to, being *pressed* into it, and emptied into the *set-pan*. The curd is then gently broken by the dairy-maid and her assistant passing their hands down to the bottom of the tub, and buoying up a portion of the curd at each time to the surface, or by again using the curd-breaker. The curd having been brought to the top, is easily seized, and separated into smaller portions, and the whey thereby released. This operation takes about half an hour. After the expiration of another half hour (or so soon as the curd is considered sufficiently settled—for there is no saying to five or ten minutes how long each particular interval of rest should be), more whey is taken out, and the curd afterwards drawn as much into one half of the bottom of the tub as its loose texture will admit of.* Upon the curd is then placed a semi-circular board adapted to the size of the tub, with a weight of about 30 pound placed upon it. This board is perforated with holes, about half an inch in diameter, to allow the whey to escape through. The tub is now set three or four inches atilt to drain the whey more readily from the curd, and to admit of its being collected and carried off. The skimming-dish is again required to lade out the whey. The whey, on its way to the set-pan, is passed through a sieve, to collect any curd which may happen to be floating in it. This curd is what is called *slip curd*, which by some is not returned to the tub, for the reason I have before stated. The weight and board are shortly taken off, and such part of the curd as has been squeezed from under them is again collected on one side, and a heavier weight (say 50 or 60 pound) applied as before. As the whey escapes from the curd it is laded out. In the course of a quarter of an hour the board is again removed, the curd cut in intersections of six or eight inches apart, to assist the discharge of the whey, and the board, with additional weights (about double the last), again applied. Some dairy-maids now add the slip curd. The weights are again increased if it be thought necessary: observing always to *let the pressure which is applied be gradual, and regulated by the degree of compactness of the curd*, for if this is not attended to now, as well as afterwards, a considerable portion of butyraceous matter will be forced out and the cheese of course deteriorated.

The curd is again cut into square pieces, taken out of the cheese-tub and broken a little by the hands as it is passed into the "thrusting-tub" (*a*, Figs. 2 and 3). [In some dairies a large-sized cheese-vat, in others a willow basket is substituted for the thrusting-tub.] In this the extraction of the whey is afterwards continued by the application of "the screw," of which there are two or three kinds, but all on the same principle (see Figs. 2 and 3). The old plan of *thrusting*—and from which the *term* is no doubt derived—was by means of a pole four or five yards long, fixed at one end into an upright post, whilst at the other was seated a lusty lad or a man, who kept regularly pressing down the pole upon the curd, the pole acting as a lever. Both poles and men are now almost entirely expelled from the Cheshire dairies; and the *screw* is also likely to be superseded by the "lever press" (Fig. 5). The advantages of this over the screw are, *that it sinks by its own action with the curd—any degree of pressure required can be applied and gradually increased, and less attention is necessary*; whereas the pressure from the screw is sudden and uncertain, and having no self-action, requires the dairy-maid's assistance every five or ten minutes to render it effectual.

The "thrusting-tub," in which the curd has now to be pressed, is round, and is perforated with holes at the sides and bottom for the whey to escape through (see *a*, Figs. 2 and 3). Before the curd is put in, a "cheese-cloth" of the coarsest kind, about one and a half yard long, and a yard wide, (or of dimensions sufficient to contain the curd), is placed in it.* In this the curd, after being broken, as before stated, is enveloped, and a "sinker," or strong circular board, which fits the inside of the tub, placed on it (*b*, Figs. 2 and 3). Upon this the screw (or lever press, if used) is let down, and the power gradually applied.

To assist still further the discharge of the whey, long iron skewers are introduced through the perforations in the tub, with their points directed upwards, so that when the skewers are withdrawn there is a drain made for the whey to follow. These skewers do not remain in more than five or ten minutes; the pressure is continued a little longer. The curd is now cut *through*, in intersections of two or three inches apart, with a large *dull* knife, so as not to injure the cheese-cloth, and the edge or corner of the curd is cut off all round, and placed in the centre. After this the pressure is again applied, and gradually increased, and the skewers introduced and withdrawn as before, after the lapse of about fifteen or twenty minutes. The curd is then taken completely out of the tub, cut into four or five pieces, and each piece broken separately with the hands to about the size of two or three inches square. A clean dry cloth is made use of, the curd folded in it, and again pressed and skewered. These operations are repeated until the whey is sufficiently extracted to admit of the

* At this stage, it is the practice with some dairy-maids, when they suppose the curd is colder or more tender than it ought to be, to return a few gallons of whey after it has been heated over the boiler in the brass pan into the tub again, to assist the discharge of the remaining whey. If, on the contrary, the curd is found warmer than is intended or desirable, which is sometimes the case in hot weather or during thunder, a few gallons of cold water are applied to prevent the curd becoming tough. These inconveniences would, in my opinion, seldom if ever happen if a thermometer was used at first, and the proper heat at that time adhered to.

* *Cheese-cloths* are *linen*, of a rather closer texture than canvass, and made for the purpose. The coarse kind are sometimes termed *screw-cloths*.

curd being *salted*, which is the next part of the process.

If the milk is set together at six o'clock, and the coagulation takes place in an hour and a quarter, the breaking, gathering, and preparation for salting is generally accomplished by eleven or twelve o'clock.

This is merely mentioned as some guide to the *new beginner*, who may not be able to judge from the state of the curd when it is fit for salting. I may here observe that it is the practice in some dairies to salt the curd, whilst, in my opinion, there is *too much whey in it*.

The *quantity of salt* used is regulated by some old custom, or by the fancy or taste of the dairy-maid, and with about as good a chance of correctness as that with which she regulates the temperature of the milk by the touch. That clever and experienced persons may determine the proper quantity of salt in this way tolerably well, I admit; but there are many others who *fall into error*, and all *for want of some fixed rule*. If there be a certain proportion of salt which would answer the purpose best, which there doubtless is, why not ascertain and adopt it?

"In all dairies" (says Mr. Wedge, the author of the original 'Report of the Agriculture of Cheshire,' written many years ago, but still equally true) "the same points are admitted to be essential, but although the means of obtaining those are, upon farms similarly circumstanced, so far alike, as to differ materially in the minutiæ only, yet upon these minutiæ much of the art of cheese-making depends.

"That an exact uniformity does not prevail in every part of the process, is no wonder; for there is not any of the business which is conducted in a dairy which tends to chemical exactness. Where there is no precision, there can be no just comparison; and where no comparison can be made, there exists no foundation for an attempt at uniformity. *The degree of heat at setting the milk together is never measured, the quantity of steep is guessed at*, and its quality not exactly known; *the quantity of salt necessary is undefined, and the sweating or fermenting of the cheese, when made, is accidental.*"

As an antiseptic, a certain quantity of salt is necessary: it is the same in this respect with cheese as it is with butter or bacon. There may be, and no doubt are, differences of opinion, both amongst makers and consumers of cheese, as to the degree of saltness which is best; and it may be necessary, in order to suit the palates of the *many*, that there should be a *variety*. I am willing to admit the force of the argument, so far, that there might be these shades of difference in different dairies, but think that they ought not to exist in one and the same dairy.—Each maker strives at uniformity as regards the *thickness* and *color* of his cheese, and would like also to attain uniformity in flavor if he could. Why not, therefore, measure or weigh the salt before using; regulating the same by the quantity of milk or the weight or quantity of curd?*

The former would easily be ascertained by means of a *gauge*, or graduated rod, which any farmer might make for himself, to suit his own cheese-tub. The way to make it would be to pour into the tub a gallon of water, or any liquid, and then to note its hight, and mark it on the rod. This being done, put in another gallon and again mark the hight, and so on until the tub is full; taking care afterwards to introduce the rod into the *same part of the tub*, as the bottoms are not often level.

It has generally been considered that a gallon of milk (supposing little or no cream has been taken from it) will produce upon an average of the season one pound of saleable cheese: that is, when the cheese is four or five months old.—In autumn there is always more curd from the same quantity of milk than at any other part of the season.

During wet weather there will sometimes be more milk than usual, though not a proportionately greater quantity of curd. An experienced dairy-maid soon detects these different results, and makes allowances accordingly. I have met with no dairy-maid who regularly weighs the salt; but a highly-respectable farmer, whose wife makes a first-rate cheese, has given me the weight used in his dairy, as near as the same can be *computed*. It is as follows:—

	lb.	lb.	oz.	
In March and April their cheeses average about	30	and ab't 0	10	salt is used.
In May, June and July	70	"	2 0	"
In August	60	"	1 12	"
In September	50	"	1 4	"
In October and Novem'er	30	"	0 10	"

In the above instance it will be seen that more in proportion was used in summer than at other times, and that the average is 1 lb. of salt for 40 lbs. of dried cheese (or say forty gallons of milk).

I was favored with an account from another dairy in which, to oblige me, the salt *for once* was weighed. For a cheese which weighed 46 lbs. a few days after making (say 42 lbs. at four months old) 1 lb. 1 oz. was used. This is also after the rate of 1 lb. of salt for 40 lbs. of dried cheese, and was said to be the quantity uniformly used throughout the year in this dairy, which consisted of about forty cows.

A third account is from a dairy of sixteen cows: the quantity of salt used was generally about 1 lb. for 45 lbs. of cheese; but the dairy-maid made a trial last year with one cheese, using only three-quarters of a pound. The cheese was made at the beginning of June, and when weighed in the middle of September was 42 lbs. This cheese was admitted to be better than the others in the same dairy.*

The salt termed the "middle grained" is the kind generally used; but some use "fine." Before applying it the curd is cut into three or four equal-sized pieces, and each of these is broken into smaller pieces by hand, or is passed *once* through the curd-mill† (fig. 4). The salt is then

* Since writing the above I have learnt that a farmer in South Cheshire, well known for his introduction of improvements in agriculture, has commenced the system of weighing his curd previous to salting it, and he says he uses salt in the proportion of 1 lb. to 42 lbs of curd. He also informs me he sets his milk together by a thermometer, and at a temperature of 76° or 77°.—May, 1845.

* It may not be out of place here to state that at Northwich, which is about the centre of the county, and where the principal salt-works are found, salt is at present bought for 8d. per bushel of 56 lbs. In large quantities the price is considerably lower.

† The *curd-mill* is of recent introduction, and it is only in a few dairies that it is met with; some dairy-maids highly approving, others objecting to it. I think it will soon be more generally adopted, as it effects a saving in time, and breaks the curd more regularly than it can be done by hand.

scattered over it, and the "breaking" continued either by the hands, the curd-mill, or both, until the salt is well intermixed and the curd perfectly crumbled. Each portion as it is broken is put into the cheese-vat, in which has first been placed a clean and rather finer cloth than was used for the previous process, and the curd is compacted as much with the hands as possible, To admit of the curd being properly pressed, it is necessary to put it into such a vat as it will *overfill* by at least two inches. It is also rounded up a little in the middle. The cloth is then brought over it and tucked in at the edges of the vat with a small wooden knife or other dull-edged instrument. In order to support the outside of that part of the curd which is above the vat, and to keep it in proper form when the press is applied, a tin or zinc hoop or "fillet," the edges of which are rounded off so as not to cut the cloth, and the ends lapping over and unattached, so that the same fillet will do for different sizes of cheese, is introduced round the inside of the top of the vat. The "fillet" thus placed sinks with the curd, and having small perforations in it, the emission of the whey is effected through it as through the perforations of the vat. Since it has become the fashion to make Cheshire cheeses *thicker* than they used to be, it is no unusual thing to see fillets six or eight inches broad.

The vat is now again placed under the screw or lever press, and the skewering is also continued. The pressure is increased at intervals, and the skewers inserted in fresh places to accelerate as much as possible the discharge of the remaining whey or "*thrustings*," as it is now termed.

In the course of an hour from the time of salting, the curd is taken from under the screw or lever press and out of the vat, for the purpose of being turned upside down, which is done on a table. In the first place, the angles of that side which was topmost in the vat are cut off; a circular piece, two or three inches deep, is often also scooped out of the centre, and both are broken small with the hands and rounded up in the middle. The cloth being drawn over the curd, the vat is then turned down upon it, and re-turning the vat with the curd in it, the other angles and centre part of the curd are broken in a similar manner: after which the tin fillet is put on, and the screwing and pressing is continued as before for about half an hour or an hour. It will, probably, be two or three o'clock in the afternoon before the curd (or cheese, as it may now be termed) *is got under the press*; that is, when it is removed from the screw to the stone press: but where the lever press is used instead of the screw, which, I think, might always be advantgeously done, all the change that will now be required is a little more weight at the end of the lever.

Before turning the cheese for the purpose of placing it under the press, it is usual to prick it perpendicularly down with a skewer in several places, for the purpose of making drains for the whey, after having been so turned. A clean cloth is applied, and where the lever press is not used the cheese is put under one of the lightest of the other kind. A pressure of six, eight, or ten cwt., according to the size of the cheese, will be sufficient. This is generally accomplished by about two or three o'clock in the afternoon. Smaller skewers are now used, and remain (by removing them occasionally into fresh places) until about four o'clock: they are then withdrawn, but the cheese remains half an hour longer undisturbed, to allow the whey to drain from it. It is then, or some time in the evening, turned, a clean cloth is put over it, and the pressing continued, If the lever press be used, the weight may be a little increased.

On the *second day* the cheese is generally turned twice or three times; it is also skewered, and clean cloths are used each time of turning. I would observe here, that if any of the cloths are used again before they have been washed and dried in the open air, great care should be taken that they be well *scalded*. The presses used for at least the two first days, and, if possible, during the whole process, should be situate in the dairy, kitchen, or some other moderately *warm place*, otherwise the whey will be longer in discharging, and more liable on that account, from the acidity which it soon acquires, to injure the flavor of the cheese. Another advantage of the lever press is, that in cold weather it may be easily moved to a sufficently warm place, which cannot be the case with the common presses. These common presses are chiefly made of one square block of stone fixed in a wooden frame, but are also made of wooden boxes filled with *slag* or other heavy material. They are generally fixed by the walls of the dairy, for the purpose of being stayed to them, and being there most out of the way; when there is not room in the dairy or kitchen, they are placed in the salting room or pantry, which latter places are often much too cold for the purpose, as the whey seldom gets thoroughly extracted when the presses are in cold situations.

On the *third day*, the cheese is again turned once or twice, but ought not to require any skewering. The heaviest press is now had recourse to, and for a cheese of 60 lbs. or 70 lbs. weight about 30 *cwt.* will be pressure sufficient; but some dairy-maids apply as much as two tons, their heaviest press being that weight. A cheese-press of this weight, made of a block of red freestone, would be 3 ft. 2 inches long, 2 ft. 8 inches wide, and 3 ft. 2 inches high.

On the *fourth day*, it is usual in most dairies to discontinue the pressing, but in others it is continued for a day or two longer.

The cheese is then removed to what is called—

THE SALTING AND DRYING-ROOM.—Sometimes tnese are distinct apartments, but more generally one room suffices for both purposes. The salt can now, of course, be only applied *externally*; and the good, *if any*, effected is to harden the coat of the cheese. The cheese I have before alluded to, as having been made with three-quarters of a pound of salt, and which *was much above an average in quality*, was removed, as an experiment, *direct from the press to the cheese-room*. I am inclined to think this is the better system, or at least that a great deal of the present labor of the salting-house might be dispensed with.

It is, however, only right to state that in most of the dairies of this county the practice of *external salting* still obtains. I will therefore describe the process usually adopted.

The cheese is taken out of the vat, and a strong bandage called a "fillet," about 2 inches broad, and long enough to go three times round the cheese, is used. As this bandage is put on, salt is applied, underneath it, to the coat of the cheese. The bandage is fastened with strong

pins, the cheese placed on stone or wooden shelves or benches, and salt spread on the top to within an inch or two of the edges. The cheese is turned daily, and fresh salt and a clean bandage applied. In some few dairies it is the practice, before the salting above described, to half immerse the cheese for two or three days in strong brine, kept in a shallow tub for that purpose. The salting process above described is continued for various periods: by some for five or six days, by others as long as three weeks. I will give the rule followed by the farmer who furnished me with the particulars of his salting of the curd, (p. 143.) It is as follows:

From the beginning of the season (about March) to the time of the cows being turned out to grass, (12th May,) the cheese remains in salt four days; from thence to the end of July, ten days; in August, eight days; September, six days; and the rest of the season, four days.

It is obvious, from the practice in this dairy, that it is considered necessary for the cheese to remain in salt longer in the middle of summer than at other seasons.

After this salting, the cheese is well wiped or washed, has a clean bandage put round it, and continues in the same room, or an adjoining one, on wooden shelves, for the purpose of being *dried*. It is turned once a day, and remains until it is considered sufficiently dry for being removed to the *cheese-room*. The length of time for keeping cheese in the "drying-house" varies from seven to twenty days; and is regulated by the temperature of the weather, or the *cheese-room* to which it has to be next removed. In hot weather, and especially if the cheese-room is exposed to the heat of the noon-day sun, the change from a *too cold drying-house* (as many often are, except, perhaps, in the middle of summer) to a too hot cheese-room, is calculated to cause *cracks* in the cheese; which said cracks have from time to time to be filled up by the application of bacon-fat, or whey-butter, otherwise mites would soon be generated, and the appearance of the cheese detracted from. To prevent this cracking as much as possible, the salting and drying-houses have rarely, if ever, the windows opened, and drafts or currents of air are thereby prevented. This precaution is also adopted in the cheese-room; and, in addition, the light is excluded either by a shutter or *blind*, as I have before stated.

The cheese I have before alluded to as having been made without any *external salting*, as an experiment, and which *was taken direct from the cheese-press to the cheese-room*, was made in the beginning of June, and at the end of September was ready for the *market*. The quality of the cheese was better than that made in the ordinary way, and all the labor of the salting and drying-house was saved. My own impression is, as I have already hinted, that the drying-rooms are often *too cold*; and that if it is found to be desirable, as perhaps it may be in some dairies, to continue the use of such drying-rooms, the heat should be kept as near as possible at from 50° to 55°. In concluding my remarks on this room, I must not omit to observe that it is necessary the cheeses should remain *bandaged*, in order to prevent their bulging, and also that they should be turned over once a day. If one cheese be made daily, one will consequently—in the course of a certain time after the season of cheese-making commences—have to be removed every day to the *cheese-room*.—When taken to this room, the situation of which I have before described, it is usual to scrape and clean the coat of the cheese, and to place it, in the first instance, in the coolest part of the room—often for a few weeks upon shelves or benches, which are cooler than the floor; subsequently upon the coolest part of the floor, and ultimately upon the warmest part. It is usual to continue the bandage or "fillet" for several weeks after the cheese gets into this room, and indeed in some dairies until it is sold. It is also usual to turn the cheeses, and wipe them with a cloth daily, for at least three or four months, and every alternate day afterwards; and when there are any symptoms of cracking, bacon-fat, hogs'-lard, or some other fatty substance, is applied. The floor of the cheese-room is generally covered with dried rushes, or a coarse grass resembling rushes, called "sniddle," or wheat-straw. The floor should be *level*, otherwise the cheeses will not be kept easily in shape; and should be well washed with hot water and soft soap about twice a-year. The temperature of the cheese-room should, when attainable, range between 60° and 65°. When this is the case, the "first make" will generally be ready for the factor by September or October, and the "latter make" by December or January; but in consequence of many rooms being badly situated and imperfectly heated, the farmer very often does not get his cheese into the market until two or three months after these respective periods.—The object gained in having the cheese-room about the temperature I have named is threefold: the perfect fermentation and ripening of the cheese, the reduction of labor, and the quicker return of *profit*.

It is usual in this county to sell the cheese by what is sometimes termed the *long-hundred*, (120 lbs. to the cwt.) but the factors often require 121 lbs. The price varies with the quality of the article, the state of the market, and the size of the cheese; for large cheeses always sell for more per lb. than smaller ones. There is, perhaps, nothing more difficult to ascertain than the average price of cheese, inasmuch as both farmer and factor make the price a secret. The highest I heard of last season (1843) was 72s. per cwt. of 120 lbs., or a little more than 7d. per lb.; the lowest would probably be about 40s. or 45s.*

Conclusion.—I am aware that a great deal might still be said bearing on this subject. The various defects of cheese, the great difference in the flavor, the effects of different pasturage and food, and various other matters, might be discussed, but it is considered this essay is already too long and tedious. I shall, therefore, content myself by giving the following tabular statement, and the information promised in the Appendix. I cannot, however, close my remarks without expressing my admiration of the industry, cleanliness and frugality of the Cheshire dairymaids. Their labors are great indeed; their cleanliness not to be surpassed; and to their good management it is that the landlord may often consider himself indebted for the *whole of his rent*.

* There is a general wish on the part of the farmers to adopt the standard weight of 112 lbs., but the factors have hitherto in a great measure succeeded in purchasing according to the old custom of 120 lbs. The law for regulating weights and measures has little or no effect in this county, as the numerous customs at variance with that law, and still in operation, bear testimony.

TABULAR STATEMENT

Of Observations taken at Four Farms in CHESHIRE: *viz., Nos.* 1 *and* 2 *in Bucklow Hundred; No.* 3 *in Nantwich Hundred; and No.* 4 *in Eddesbury Hundred.*

Note.—At Farm No. 1 there are Two Observations.

	Day of Observation.	Number of Cows.	Quantity of Milk at Two Milkings, (except No. 2.)	Heat of Milk when the Rennet was put in.	Quantity of Rennet.	Time occupied in Coagulation.	Heat of Curd and Whey after Coagulation.	Heat of Dairy or Room in which the Cheese was made.	Time occupied in gathering the Curd and completing the formation of the Cheese.	Quantity of Salt used internally.	Weight of Cheese a day or two after making.	Weight at some subsequent period.	Quantity of Cream taken from night's milk.	Quantity of Whey.	Quantity of Whey Cream.	Quantity of "Fleetings."	Size of Cheese.
			Galls.			h. m.			h. m.	lb. oz.	lbs.	lbs.	Qts.	Galls.	Qts.	Qts.	Inch.
No. 1.	Nov. 21.	42	43	83°	About 3 sq. in. of skin, 1 pint of water.	0 50	73° but raised with hot whey to 79°	..	3 0	1 1	55	47 Aug. 17 follow'g.	..	37½	5¾	4	15¾ Diam. 6½ Deep. Aug. 17.
	Aug. 17 following.	48	Two Cheeses made in two Tubs. 59 53	88° 86°	3 sq. in. skin, ½ pint of water, to each cheese	1 0 1 0	.. 85°	68° at 7 o'clock.	..	2 4	58½ 53	..	1½ ..	102 22	13½ 3	.. 3	.. ..
No. 2.	Oct. 13.	10	24 Four Milkings.	78°	3 sq. in. skin, ¾ pint of water.	0 45	74°	..	4 0	0 4	..	..	1	47½	..	..	16 Diam. 7½ Thick. Aug. 30.
No. 3.	Aug. 10.	26	56	..	..	1 0	..	78° at 11 o'clock.	5 15	1 0	60	..					
No. 4.	Aug. 19.	53	107	77°	12 or 16 sq. in. of skin, 1 pint of water.	1 45	72°	Morn. 64°. Noon 67°.	..	4 4 besides one handful in Milk.	Two Cheeses made; weight not ascertain'd	57 53 Sept. 16.	4	28	..	..	15 Diam. 8¼ Thick. 15 Diam. 8 Thick. Sept. 16.

These observations are not so complete as might be wished, not having been taken at the time in a *tabular form*, and with a view to publication.

Note.—Cheese loses about 15 per cent. in weight the first year.

APPENDIX.

THE SCALDING OF THE WHEY, AND THE MAKING OF WHEY-BUTTER.—This process is carried on simultaneously with the making of the cheese. The whey which comes from the curd previous to its being salted is called the *green whey*, and that which is extracted afterwards the *thrustings*, or white whey. The latter are more or less impregnated with salt. As soon as the principal part of the green whey is collected in the *set-pan*, a fire is lighted under it of Cannel coal, crop-wood, or other quick burning fuel. The remainder of the green whey is added after the fire is lighted. It is usual to skim off any small particles of curd which float on the whey, and give them to the poultry.—Whilst the whey is heating it is necessary that it should be frequently stirred, or it will be liable to burn to the bottom of the pan. When it has attained a heat of about 160° or 170°, if any whey is wanted for the family it is then taken out. When the whey has reached the heat of 180° it is in a fit state for *breaking*. This may be effected by any simple acid, but it is customary here to use sour buttermilk, and with it the *thrustings* of the previous day. The quantity of buttermilk necessary may be easily ascertained. I have only noted what was used in one instance, which was 1 pint of buttermilk and 2 quarts of thrustings, (which had been mixed the day previous to being used, and kept in a tolerably warm place to increase the acidity) to 22 gallons of whey. The *breaking* by this method, which is almost instantaneous, has the effect of causing all the creamy matter to rise to the surface, from which it is regularly skimmed off, and put into a cream-mug. The last skimmings are termed *fleetings*, and are generally reserved for the use of the servants. It is necessary, after the *breakings* are put in, to check or withdraw the fire, to prevent the whey from boiling. The refuse whey, after the cream is skimmed off, is ladled out of the pan for the use of the pigs; and it is generally conveyed by a spout fixed above the pan, which leads to a cistern or tub in which the pig-meat is kept.

The making of butter from *whey-cream* varies very little from the process of making butter from the cream of milk. The cream is kept for three or four days, or until it has become clotted (provincially termed *calved*.) Those who make the best whey-butter have a spigot and faucet to each of their cream-mugs to let off the whey, which in the course of a few hours settles at the bottom, and which, if allowed to remain, imparts a rank flavor to the cream, and consequently to the butter. The temperature of the cream, when put into the churn, is generally ascertained by the hand; but if a thermometer be used, the heat which I would recommend is 60°, having found that the best. If it be much *higher* than this, the butter may be expected not only to be soft, but inferior both in quantity and quality; and if much *lower*, the operation of churning will be prolonged, and indeed tedious. At this heat the time in churning will probably be about an hour and a-half. It will perhaps be necessary in cold weather to put hot water into the churn, and in warm weather to put in cold water, in order to attain this desirable object as to heat.

From 100 gallons of milk there will not be less than 90 of whey, which should yield from 10 to 12 gallons of cream, or 3¼ to 4 pounds of butter. The quantity of whey-butter per cow is about half a pound per week, taking the season through; but with that small portion of cream of the evening's milk (to which I have alluded at p. 140) added, the farmer often churns as much as three-quarters of a pound of butter per cow per week, or from 20 to 25 lbs. per annum: 1 lb. of salt is sufficient for curing 37 lbs. of butter, if for present use.

CHEESE-COLORING.—This ingredient is or should be *annatto* (or *annotto*), the produce of the *Bixa orellana* of Linnæus. It is, I believe, chiefly imported from the West India Islands, and used for dyeing. The coloring chiefly used in cheese-making is *prepared* by manufacturers in this country for the purpose. It gives the cheese that amber or cream-like appearance which is unfortunately required in order to *please* or *deceive* the eye of the London consumer. For the Manchester and Liverpool markets, and for *home* consumption, the Cheshire farmer rarely uses it in his cheese-making, as it is well known it does not improve, but if an inferior article is bought, and especially if much be used, it may deteriorate the flavor very much. Those who wish to be enlightened on this subject would do well to read the "Essay on Cheese-Coloring," written by Mr. Whitley of Stretton, published by Ridgway, in which it is clearly proved that the greatest bulk of the cheese-coloring used in this country is only an *imitation of annatto*, but sold by that name, and consisting of such ingredients as tumeric powder, potash, and soft soap or train oil, well mixed to form a mass along with a *little* "real Spanish annatto." I cannot, for two reasons, here resist inserting a verbatim copy of a paper which was printed and published several years ago by a cheese-factor in Cheshire: *first*, because it is an acknowledgment, on his part, that much bad coloring did then exist; and, *secondly*, because it contains 'A Word of Advice to the Dairy-maid,' which shows what were considered some of the defects of the dairy system at that time, and what in his opinion the remedies. Many dairy-maids even *now* would do well to attend to this latter advice.

"LOOK YOU HERE, AND BUY ——'S COLORING.—To all that may be concerned in making colored dairies of cheese, —— begs to inform the users of annatto, for the purpose of coloring, that he has for the last ten years felt sorry to his heart for great numbers of dairy-owners, to see such bad colored dairies as he in general has done, and the very great loss the owners thereof have annually met with on this account.

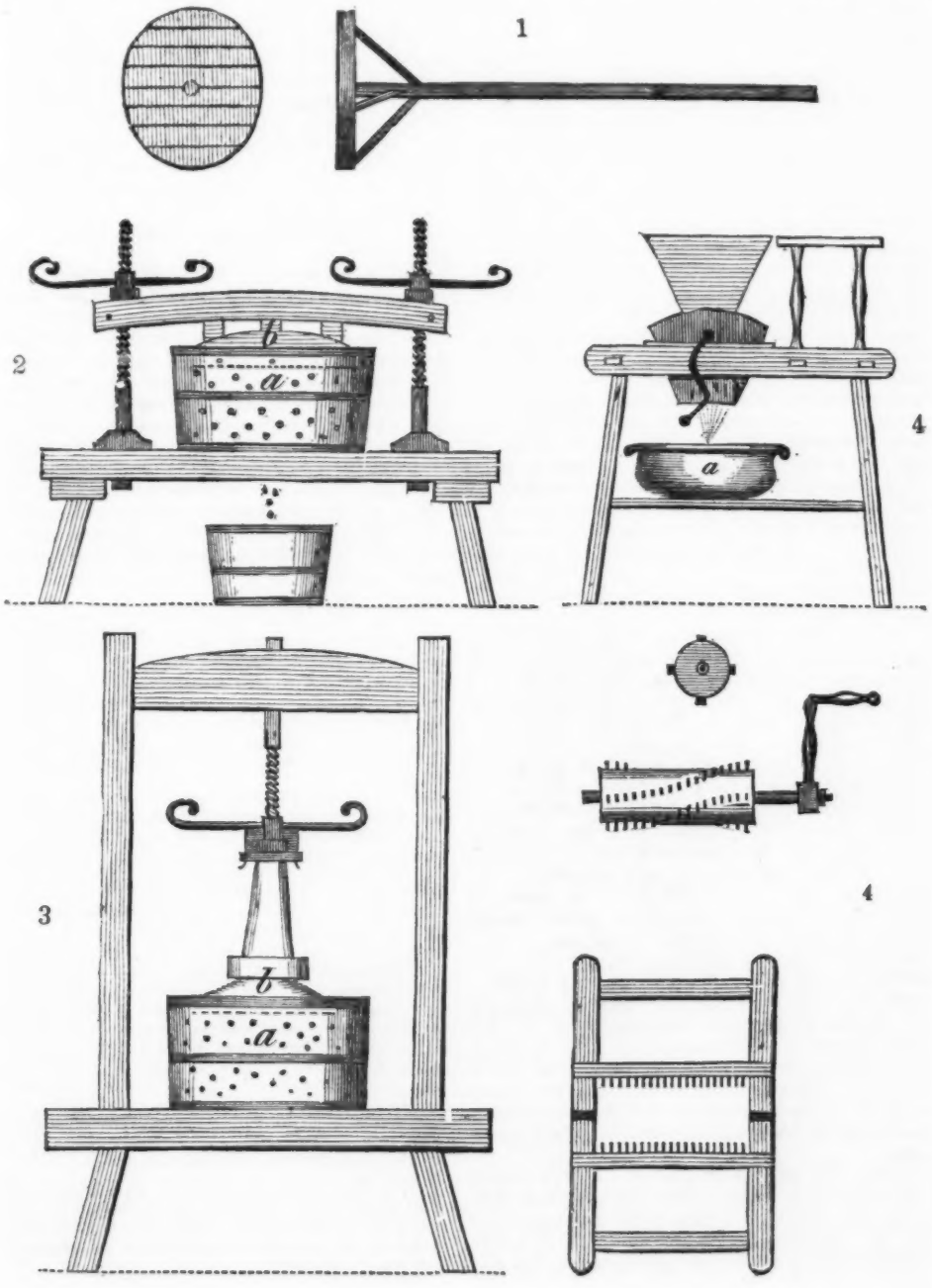
"—— having, therefore, been determined, for the farmers' interest, to use every influence possible with the manufacturers of this article to have the same genuine, which till lately has been to little purpose, as one-half they have in general sent out has proved to be far short of the color which the market requires, he has at last gained considerable information from sundry manufacturers; and he has now engaged a person that has been in the habit of making and seeing this *article made for the period of twenty years* and upwards, and as —— is now in the habit of seeing and hearing what other manufacturers have been and are doing, convinces him that farmers will still find themselves but little better off by following their old mode, he has determined to make the article of annatto in its genuine and original purity, and is now giving the public a favorable opportunity of having some of this very superior coloring, which, from its brilliant color, will recommend to the farmer a great variety of customers for their choicest dairies."

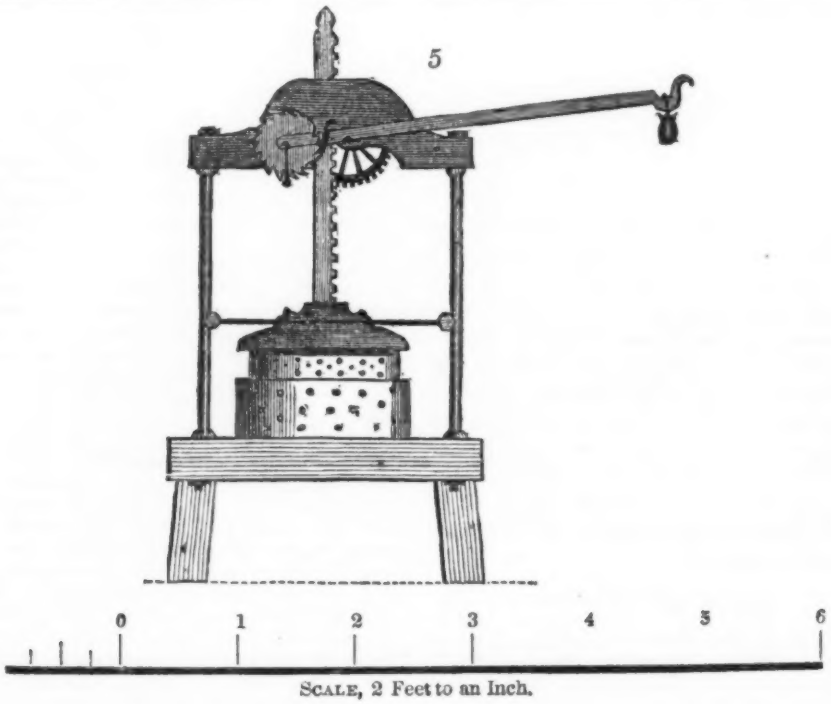
"A WORD OF ADVICE TO THE DAIRY-MAID.—Let your rennet or steep be put into your milk of a temperate heat or warmness. After the curd is formed, do not let any part of it be starved, or get any colder than your own hand.

"All dairy-maids that would have real fine-flavored cheese would do well to thrust it with their hands, that there are no cold draughts from doors upon their curd, but keep it gradually warm, but not to scald it neither with water, whey, nor burning vats. Have your first press not too heavy, and in as moderate a warm place as you can possibly place it; study a warm salting-room; use neither flags nor slates for your cheese to lie on, but good planks; your drying-room to be moderately warm, and also your cheese-room; cold damp rooms, flags, or slates, will spoil the handiwork of the best dairy-maids; you should never suffer your cheese to be starved, or get into a cold damp state, as it very materially hurts the flavor.

"Good calf-skins, or calves' bags, as are invariably made use of, are of serious consequence to the flavor and the coming of the cheese."

A Recipe for Curing the Maw-Skins.—Procure the skins fresh from the butcher the year previous to their being wanted; clean out the chyly matter, and every other apparent impurity; the inside is then turned outward on a table, and salted; the skins are then laid one upon another, with a layer of salt between each, in a deep earthenware vessel similar to a cream-mug; they are then covered over with salt, and have a lid of slate or flag placed on the top. They are taken out as wanted, about a month previous to being used, and the brine drained from them. They are then spread on a table, and fine salt is powdered on each side. In this state they are rolled with a paste-roller, distended with a splint of wood, and hung up to dry.





SCALE, 2 Feet to an Inch.

THE AMERICAN CHEESE TRADE.

THE export of cheese to Great Britain will this year reach 12,000,000 lbs., against 15,386,836 in 1848–49, being a decrease of one-fifth. Last year may be considered a maximum, *unless quality improves*, which, if it does, Great Britain could take double the quantity; as a proof of which, the consumption of foreign cheese there in 1831 was only 14,000,000 lbs., and in 1848 had increased to 48,000,000 lbs., being about 250 per cent.

The quality this season has shown an improvement, but only to a moderate extent; still there was great difficulty in getting a prime article, there being only about 10 per cent. strictly prime, and 20 per cent. fit for profitable shipment to England. However, we have great dependence upon American enterprise, and feel confident that American cheese, as a rule, will in a few years equal, if not surpass English. We would caution farmers to be careful and improve the quality, as they may depend upon it, that every year there will be a greater difference in price in favour of first class, and parties must get tired or unable to make shipments to incur a certain and increasing ratio of loss on inferior quality. The result of sales in England this year has proved that only first class has made a small profit, and that inferior has made a great loss; and we would suggest to careless dairymen and country buyers, that if they do not keep an eye to the quality, they will certainly find to their cost, instead of a ½ per cent. per lb., being the difference in price between inferior and prime, it will sink down from two to three cents., and be a drug at that.

We have been led to make these remarks as to quality, which may be thought by some too pertinent. The reasons are, at the opening of the trade, owing to the reduction of duty in England and wasteful consumption there, during the railway mania, the trade was profitable, and "all was fish that came to the net," so that in a scarce market an inferior article might pass; but now matters have changed, and the supply both of English and foreign cheese is fully as great as the demand, therefore we hesitate not in affirming, it is only by improving the quality, that the American cheese trade can last, thereby advancing the interest of all parties concerned.

Receipts of Cheese at tide-waters of the Hudson.		Cheese exported to Great Britain in years and seasons.		Cheese retained for Home Consumption.	
Seasons.	*Pounds.*	*Seasons.*	*Pounds.*	*Seasons.*	*Pounds.*
1834 . .	6,340,000	—— . .	——	1834 . .	6,340,000
1835 . .	9,586,000	—— . .	——	1835 . .	9,856,000
1836 . .	14,060,000	—— . .	——	1836 . .	14,060,000
1837 . .	15,560,000	—— . .	——	1837 . .	15,560,000
1838 . .	13,810,000	—— . .	——	1838 . .	13,8 0,000
1839 . .	14,530,000	—— . .	——	1839 . .	14,530,000
1840 . .	18,820,000	1840 . .	723,713	1840 . .	18,096,287
1841 . .	14,170,000	1841 . .	1,748,781	1841 . .	12,421,219
1842 . .	19,004,000	1842 . .	2,456,671	1842 . .	16,547,329
1843 . .	24,336,000	1843 . .	3,440,144	1843 . .	20,895,856
1844 . .	26,672,500	1844 . .	7,433,145	1844 . .	19,239,355
1845 . .	29,371,000	1845 . .	7,941,187	1845 . .	21,429,813
1846–7 .	34,812,513	1846–7 .	10,368,419	1846–7 .	24,444,094
1847–8 .	40,844,000	1847–8 .	10,550,230	1847–8 .	30,293,770
1848–9 .	43,278,526	1848–9 .	15,386,836	1848–9 .	27,891,690
1849–50 .	42,097,818	1849–50	11,921,875	1849–50 .	30,175,943

—*Messrs. Kemp & Co.'s Circular.*

PARING AND BURNING

Is a process much used in England for restoring old and foul land to cleanliness and fertility. In this country we have never seen it put in practice, except by Mr. Sotham, at Hereford Hall, near Albany. The operation is carried on with a facility and despatch that we should not have expected. and, as we are told, with results altogether satisfactory. We have seen so much land in similar condition, and therefore to all appearance inviting the application of the same process, that we have deemed it expedient to copy from Rev. W. L. Rham's Dictionary his description of the operation and its objects.

PARING AND BURNING.

This operation consists in cutting a thin slice from the surface of land which is overgrown with grass, heath, fern, or any other plants which form a sward by the matting together of their roots. The sods are allowed to dry in the sun to a certain degree, after which they are arranged in heaps, and burnt slowly, without flame or violent heat. The result is a mixture of burnt earth, charred vegetable fibre, and the ashes of that part which is entirely consumed.

The object of this operation is twofold: first, to kill insects and destroy useless or noxious weeds completely; and secondly, to obtain a powerful manure, impregnated with alkaline salts and carbonaceous matter, which experience has shown to be a very powerful promoter of vegetation.

The instruments by which this is effected are, either a common plow with a very flat share, which may be used when the surface is very level without being encumbered with stone or large roots, as in low, moist meadows; or, in most other cases, a paring-iron, which is used by hand. The crossbar of this instrument is held with both hands; and the upper parts of the thighs, being protected by two small slips of board, push the instrument into the ground, so as to cut a slice of the required thickness, which is then turned over by moving the cross-handle. The labor is severe, and a good workman can scarcely pare more than one-sixth of an acre in a day. The price of this work is from 15*s*. to 25*s*. per acre, according to the price of labor. The drying. burning, and spreading of the ashes are contracted for at from 10*s*. to 15*s*.. or more; thus the whole cost is from 25*s*. to £2 per acre. In France it is done by a *cob*, which is like a shipwright's adze, and the operation is called *écobuer*.

Paring and burning the surface is an almost invariable preliminary in the converting of waste lands to tillage; and where these lands are in a state of nature, overrun with wild plants which cannot be easily brought to decay by simply burying them in the ground, burning is the readiest and most effectual mode of destroying them. In this case the practice is universally recommended and approved of.

But it is not only in the reclaiming of waste lands, and bringing them into cultivation, that paring and burning the surface is practised. The fertility produced by the ashes, which is proved by the luxuriance of the vegetation in the first crop, has induced many to repeat this process so often as materially to exhaust the soil, and induce partial sterility. Hence the practice has been recommended on the one hand. and strongly reprobated on the other.

When we come to apply to the subject the test of experience, and reason correctly on the facts which are presented to us by the abettors of the practice and its adversaries, we shall find that the advantages and disadvantages arise chiefly from the circumstances under which the

operation is carried on. But it may be necessary to an impartial examination of the subject, to inquire into the changes produced on the substances subjected to the process of burning, when it is done with due precautions.

In burning vegetable matter in an open fire, the whole of the carbon is converted into carbonic acid and flies off, leaving only some light ashes containing the earthy matter and the salts which the fire could not dissipate. These are no doubt very powerful agents in promoting vegetation, when they are added to any soil; but they are obtained at a very great expense of vegetable matter, which, by its decomposition in the earth, might also have afforded food for vegetation. If the earth which is burnt with the sods is of a cold clayey nature, the fire will change it into a kind of sand, or brick-dust, which is insoluble in water, and corrects the too great tenacity of clays, by converting them more or less into loams. This is so well known that clay is often dug out of the subsoil to be partially burnt. On stiff clay soils, therefore, there is a double advantage in paring and burning, that of the vegetable ashes and of the burnt clay. When the fire is so managed that the vegetable matter is only partially burnt, the oily and inflammable portions being converted into vapor by the fire without being destroyed, and absorbed by the earth, the effect produced is only to impregnate the earth with minute particles of matter, readily converted into the constituent parts of vegetables. The earth is the mere recipient of these particles, which are held in its pores, as water is in a sponge, ready to be let loose to any substance which has the power of attracting them. The moisture, which the dry earth will also absorb from the atmosphere if no rain should fall, is retained and increased by the effect of the salts with which it is impregnated. It is uniformly observed that turnip-seed, which in most soils will not vegetate without heavy dews or rains, if sown in dry weather, scarcely ever fails to spring up in the ashes of a soil that has been pared and burnt. May not this be ascribed to these particles, which have been taken up by the earth in the operation of slow combustion, absorbing moisture from the air, and giving it out to the seed which has been sown? It does this better than a heavy shower would: a heavy shower soaks the ground for a short time, and swells the seed: but, if it be succeeded by a hot sun, the water evaporates so rapidly that the seed loses its moisture, and vegetation stops. The earth, which attracts moisture from the air, keeps it, its absorbent nature preventing the evaporation; and it furnishes it gradually to the vegetating seed as it is required. The wonderful effect of peat-ashes on young clover may be explained on the same principle, and probably also that of gypsum. There can be no doubt, then, that considerable advantages may result from the operation of paring and burning the surface of clays. But what is lost and destroyed in the operation? All that escapes in the shape of gas or vavor. The gas will probably be carbonic acid; for this is formed by the combustion of charcoal. We know that hot lime has a very strong attraction for this substance, which it fixes in a solid state, becoming a carbonate of lime; and we have no reason to think that it parts with it to the roots of plants But other earths may absorb carbonic acid, without having so great an attraction for it, and let it loose to water, with which it is known to combine in certain proportions, and to be thus carried into the vessels of growing plants by the attraction of the roots. If this should prove to be the case, we may account for the great effect of burnt sods in promoting vegetation.

The principal objection to burning is, that it destroys a great portion of vegetable matter. But this is a fact to be proved, and is perhaps rashly taken for granted. When vegetable matter decays in the earth, it loses much of its substance, which is converted into volatile matter, and flies off into the atmosphere. It is possible that thus more is lost during the time that the slow decay goes on, than even in burning with due precautions. This is a fact which may be difficult to ascertain; but it is not impossible; and therefore the assumption of the contrary requires to be founded on some proof or experiment. The earthy portion of the soil may be diminished by driving out the water which it held, as is manifest in burning clay, and it shrinks into a smaller space; but there is as much earthy substance as before, and this substance is improved by the burning. It appears, then, that a clay soil may be pared and burnt, without its real substance being diminished; and if its texture is improved, it becomes more fertile by the operation.

Burning clay soils is in fact something analogous to liming. Lime dissolves the vegetable matter, and enables its elements to enter into new combinations; but if no new vegetable matter be added to restore what is exhausted by vegetation, liming, as well as paring and burning, is detrimental in the end. Many experienced farmers pare and burn the soil on the edges of their ditches and on the banks on which the hedges grow, because they thereby exterminate many rank weeds; and the burnt earth mixed with farm-yard dung makes an admirable compost. Here the burnt earth acts as an absorbent, and no doubt attracts many of the volatile parts of the manure, which are produced by the decomposition of animal and vegetable matter in it. Paring and burning, therefore, should be joined to manuring, if a powerful and immediate effect is desired without exhausting the soil; and in this case we do not hesitate to recommend it on all cold clay soils where rank weeds are apt to spring up, and coarse grasses take the place of the better sorts which have been sown. The proper time to pare and burn is evidently after the land has lain in grass for several years, and is broken up for tillage. The surface should be pared thin; about two inches is the extreme thickness allowable for the sod if the soil is very stiff and poor, and as thin as possible in a better soil. It should be done with a breast-plow or paring-iron by manual labor. The sods should be moderately dried, and then arranged into small heaps with a hollow in the middle to hold heath or bushes to kindle the fire. When it has fairly established itself, all the apertures should be carefully closed. Wherever any smoke breaks out, a fresh sod should be immediately put over it; a heap containing a small cart-load of sods should be smouldering for several days without going out, even if it rains hard. If the fire is too brisk, the earth will form hard lumps, and even vitrify; but otherwise it comes out in the form of a fine powder, in which evident marks of charcoal appear. If this is of a fine red color, it is a good sign; for the iron in the earth has been converted into a peroxide, which is perfectly innocent in its effects on vegetation;

whereas all the saline impregnations of iron are more or less hurtful. It is better to burn the sods in large than in small heaps; for the more the fire is smothered, the better the ashes.

So great a quantity of ashes is sometimes produced as to admit of a portion being carried off on grass land, or used to manure another field for turnips. As this is evidently robbing the field where the operation has been carried on, an equivalent quantity of manure should be brought in exchange. Perhaps the most advantageous mode of using the ashes is to spread them in the drills where the turnip-seed is to be sown, after a portion of dung has been buried under them. In this manner the ashes from one acre of land pared and burnt, together with ten or twelve cart-loads of good yard dung, will manure two acres, and all the manure of one acre, in the ordinary mode of raising turnips on ridges, will be saved. If the ashes will produce as good turnips with half the usual quantity of dung, the expense of paring and burning is amply repaid. But experience proves that the earth and ashes almost ensure a good crop of turnips in many poor stiff soils in which they would probably not have succeeded if sown in the common course of cultivation without bones or ashes.

When a considerable extent of poor land is brought into cultivation, and there is no sufficient supply of manure at hand, paring and burning a portion of the land every year, by which a crop of turnips is obtained, is a most effectual means of improvement. Lime may be used at the same time with the ashes, and will increase their effect, provided some vegetable undecayed matter remains in the soil after paring; but lime will tend to exhaust this; and if, in consequence of liming, a few good crops of corn are obtained at first, the soil will be so exhausted as to be of little value afterwards. This is the abuse of the practice which has caused it to come into disrepute. It would be a great waste to burn the surface of a rich piece of grass land where the plants growing in it are tender and succulent, and would readily rot on being plowed under; in such case a moderate application of lime would have a much better effect. This kind of land will produce good crops without any manure, and continue fertile for many years if judiciously cultivated. To pare and burn rich land is wasteful, and can never be recommended. It is only on poor land which has not strength to produce a crop, and of which the texture requires to be improved and its powers stimulated, that paring and burning is advantageous; on poor, thin, chalky soils that have been laid down with sainfoin, of which the roots and stems are grown coarse and hard, so as not readily to rot in the ground, the operation is proper and advantageous. The turnips produced by the ashes, with or without the assistance of dung, must be fed off by sheep folded on the land, whose dung and urine will enrich it, and their tread consolidate it. By this mode of proceeding great advantages are obtained from paring and burning, and the land, so far from being deteriorated, will be improved.

Many landlords rigidly forbid their tenants to pare or burn any part of their land, from an idea that the heart of it is destroyed by the burning. If they would would only insist on a certain quantity of dung being put on, either at the same time that the land is thus treated, or for the next crop, and prohibit the sowing of corn crops except after turnips, clover, or some other green crop consumed on the farm, there would be little danger of any detriment to the land, even if it were pared and burnt once in every ten or twelve years, provided it were judiciously treated in the intervals. The farmer would be benefited in many situations, and the practice would tend to keep up the value of the farms.

In Devonshire, where the land has been pared and burnt from time immemorial, even where the soil is rich, the practice has been often resorted to without any judgment. Provided a crop of corn or potatoes was obtained at little cost, the consequences to the future state of the land were not heeded; and landlords, seeing their farms impoverished, put a stop to the practice. Thus many useful modes of cultivation have been reprobated from the abuse of them, which, properly applied, would have been advantageous to all parties. There is no maxim more true than this; that whatever injures the landlord, injures the farmer who is not desirous of removing, and *vice versâ*; and all restrictions on cultivation, however necessary when there is a fear of dishonest conduct, diminish the value of a farm and lessen the rent which can be fairly afforded for it. Ignorance is often a greater destroyer of the interest of both landlord and tenant than wilful dishonesty; and the spreading of useful information among tenants, so that they may see their own advantage, is the surest means of improving landed property. Many tracts of waste land might be brought into cultivation by means of paring and burning, which without it would never repay the labor required. Where the soil is inclined to peat, this operation and abundant liming are the indispensable preliminaries of cultivation. The ashes and the lime will produce vegetation and food for animals. These will produce dung to supply what the vegetation abstracts, and to assist also in the farther decomposition of the peaty matter, converting it into vegetable mould.

The first crop after paring and burning, as was observed before, should, if possible, be turnips, and these should be consumed on the spot; but there are exceptions to the rule. The soil may be a stiff clay of a considerable degree of natural fertility, only encumbered with rank weeds and grasses. In this case the surface is burnt to destroy these, and a crop of corn may safely be taken after the paring and burning, the land coming into a regular alternate rotation after it. For example, the next crop may be beans or tares, with a good proportion of dung; or clover may be sown with the first crop, if the ground appears fit for it. The effect of the ashes will be readily perceived in the luxuriance of the clover. Such land may be afterwards cultivated, according to its nature and quality, with the rest of the farm; or laid down to grass after a course of cleansing and ameliorating crops.—Thus old wet meadows, after having been well underdrained, may be greatly improved, and either converted into arable fields or laid down again with choice grasses.

Old rough pastures may often be greatly improved by a very thin paring and burning, so as not to destroy all the roots of the grass. When the ashes are spread over the pared surface, some good grass-seeds are sown with them. The whole is well harrowed or scarified and rolled, and the grass which will spring up after this will be greatly improved, and will fully repay the expense of this simple mode of renovating it. This is the cheapest mode of improving coarse pastures that we know, without breaking them up.

The partial paring and burning of the headlands of fields, for the purpose of mixing the ashes and burnt earth with dung in a compost, is a most excellent practice, and often superior to that of using the sods only, without burning them. These sods contain innumerable seeds of weeds, and eggs or maggots of insects, which are not destroyed by the fermentation of the heap, but, on the contrary, are brought to life. The loss of a portion of vegetable matter in the burning is amply compensated by the destruction of these enemies of the future crops.

It now only remains to take notice of the soils and situations where paring and burning cannot be recommended. Wherever the soil is very loose from a great proportion of silicious sand in its composition, and is held together chiefly by the slender roots which run through it, the burning would destroy the whole of the vegetable matter; for none of the volatile parts which the fire dissipates or generates would be retained or absorbed, but would pass through the loose sand in the same way that water would. Here then would be actual destruction; and the residue would be a mere barren silicious sand, much worse and more porous than it was when held together by the roots. The only way to bring such soils into cultivation is to put clay or marl on them, and to force vegetation by means of liquid manures, chiefly the urine of animals, consolidating them by every means applicable, so that they may retain moisture, and that the manure may not be washed through by the rains. Such soils may be improved, but they are the most ungrateful of any; and it is only necessity and indefatigable industry which can make them produce any crops.

It is very easy to ascertain whether any soil will be improved or not by paring and burning. A few sods may be taken and exposed to heat in an iron pot closely covered over, or in a large crucible: the heat should not be so great as to produce light, but should be kept up for a considerable time, till the sods are consumed. If the ashes are red, and the whole is a fine powder, with particles of charcoal in it, the soil from which it was taken may be safely pared and burnt, especially if it forms a mud with water, and the earth is not readily deposited. But if it feels gritty, lets the water readily through, and is soon deposited when mixed with it, burning will not be advantageous. This is the evident result of the principles laid down before.

On the whole, the operation of paring and burning, when judiciously applied and properly performed, is a most excellent and cheap improvement of certain soils, and it will never diminish their fertility, if they are properly cultivated and manured, and a judicious succession of crops is adopted; but on the contrary it will improve their quality and texture, and make them more productive.

Consumption in Horses.—Mr. Percivall, the great English veterinarian, says that "*pulmonary disorders carry off more horses than all other diseases.*" Though this is probably an over-estimate of mortality from that source, when we consider how much sudden changes of temperature and checked perspiration injure man, why may we not suppose that many horses are killed by it; and hence we should perceive and act upon the propriety of attending more to the condition of the horse when turned out, or otherwise exposed to sudden change from heat to cold. The Spaniards have a saying that a *draft* of air "that will blow out a candle will kill a man;" but we think nothing of putting a horse however much heated into a stable with a draft of cold air coming on him from without. It is said not to be unusual in England for a farmer to have to re-stock his farm with horses three times pending a 19 years' lease. Is not our climate liable to greater and more sudden changes than that of England? Has any one calculated how often his stock of horses is renewed in 20 years? We once heard a man in Baltimore who keeps accounts of expenses even to a fip for ginger-cakes, say that to keep a carriage and horses in that city for a series of years, including wear and tear of every sort, costs $1000 one year with another. Is it so! he belongs to what is called the *haut ton*, if we have any such ton in our country. We have enough to ape the *haut ton* of Europe as near as they can conceive and come up to it.

The St. Bernard Dog.—This is a variety nearly allied to the Newfoundland breed, has been trained by the benevolent monks of the convent near the top of the mountain of Great St. Bernard, to hunt out and extricate such unfortunate travellers as may have been buried under the snow drifts or avalanches while attempting the neighbouring dangerous pass between Switzerland and Savoy. One of these noble animals was decorated with a medal, in consequence of his having saved at different times the lives of twenty-two persons, who must otherwise have perished. In the museum of Berne is still preserved the stuffed skin of "Barry," another of these dogs, together with the bottle and collar which he bore in his lifetime; for the good fathers, with a provident care to afford every chance of escape to the unfortunate travellers, fasten a flask of spirits about the neck of the dog before he starts on his search. Barry having discovered a boy whose mother had been destroyed by an avalanche, unhurt and asleep in the hollow of a glacier, and almost stiff with cold, delivered to him the bottle suspended from his neck; and when the boy had refreshed himself, he found means to persuade and prevail with him to mount on his back, and thus carried the little fellow to the gates of the convent. This dog had been the means of rescuing from death upwards of forty persons before he was superannuated; when he was sent to pass the remainder of his days on a pension in a more genial climate.

Another letter from H. C. CAREY *to a distinguished patriot of the South, on the true sources of—and the remedy for—the existing discord between the North and the South; and how they involve the interests of Agriculture. Written for* "THE PLOUGH, THE LOOM, AND THE ANVIL."

PHILADELPHIA, *July* 4, 1850.

DEAR SIR—There are two diseases raging in the Union—Anti-slavery and Pro-slavery—and from the latter you are, I think, by no means entirely free, for which reason, perhaps, it is that you doubt the accuracy of my views in regard to the causes of the former. I propose now to furnish you a sketch of the causes of your own complaint, with a view to indicate the remedy, believing that you may be satisfied that *both owe their existence to the same error of commercial policy*, and that the same remedial measures will eradicate both, to the great advantage of ourselves, and of the Union in which it is our fortune to live.

Sixty years since, the South united with the North in prohibiting the introduction of slavery into the North-Western Territory. Little more than forty years since, southern men united with northern men in rejecting the application of Indiana to be exempted from the operation of the Ordinance of 1787. Twenty years since, Maryland, Virginia, and Kentucky, were almost prepared for measures looking to the abolition of slavery within their limits, and it was the almost universal belief throughout those States, that gradual abolition was indispensable to their progress in population, wealth, and happiness. Since then, a change, and a most remarkable one, has "come over the face of the southern dream," and it has been discovered that slavery is "a blessing" instead of being a curse, as it was held to be by Washington, Jefferson, Madison, and most if not all of their contemporaries, men perhaps quite as well qualified to form a correct judgment in regard thereto as are any of their descendants. It has also been discovered that the wealth of slave States grows more rapidly than does that of free ones, and that true policy on the part of the latter would lead them to reduce the labouring classes to a state of slavery. Further, it has been *proved* that one of the great objects of certain provisions of the Constitution, was the maintenance of an "equilibrium" between the free and the slave States, and that the ordinance of '87 was "an act of aggression" upon the South, which otherwise would have secured to slavery, and to itself, a portion of the fertile region north of the Ohio, in which "the domestic institution" would have continued to exist side by side with those of the numerous immigrants from the free States, and from Europe, that would have flocked to this northern branch of the southern tree. Extraordinary as is this idea, it is but one of many almost equally so that have been brought out in the long course of pro-slavery agitation, and brought out, too, by men who profess to be disciples of Adam Smith! The answer to the theory of "equilibrium" might be found in the fact, that the effort in 1812, to extend the area of free soil, by incorporating Canadian States within the Union, *was a Southern measure.*

There has thus been a total revolution of the southern feeling on this subject, and it dates back less than twenty years. Were we to look for the cause of this to any mere change of moral feeling, we should err as widely as we should do were we to ascribe the northern agitation in regard to free-soil to an increased conviction of the sinfulness of slavery, and an increased belief that duty to his God required interference on the part of the northern man

with the rights of property of his southern neighbour. The man of the North who denounces slavery as a crime and the slave-holder as a criminal, is not more moral than were thousands of his predecessors who owned slaves and felt that in so doing they were guilty of no crime; nor is the man of the South who regards slavery as "a blessing" less moral than were thousands of his predecessors who regarded it as a blight, and held it to be the duty of all good citizens to exert themselves for its extinction. What, then *is* the cause of this extraordinary change? Why is it that people who but twenty years since were so nearly united in opinion are now so widely separated? Why is it that the cause of emancipation goes backward in the South, as abolitionism and free-soilism go forward in the North? This is a question of great interest, and I will endeavour to answer it, but to do so satisfactorily it will be necessary to show what are the circumstances that in other countries have marked the progress of man from slavery to freedom, or from freedom to a state of slavery.

In all those countries in which men have become free, we see that freedom has come with increased density of population and increased value of land, the owners of which, as a body, have become more rich as its occupants became more free, and as their lands became more and more divided. If we desire evidence of this we may look to the steady growth, for centuries, of value in the land of England, accompanied by increased freedom of the people employed in its cultivation: or to Belgium, where the freest people of continental Europe pay, as annual rent for the use of flax land, ten times as much as would purchase the fee of an acre of good cotton land in Alabama —or to France, where land increases steadily in value as man becomes more free—or, in fact, to any part of the world in which the value of land is increasing, or where it has at any time increased. *The prosperity of the landholder is, therefore, inseparably connected with the growing freedom of the labourer.*

If, on the contrary, we look to those countries in which land diminishes in value, we shall see population diminishing, land accumulating in fewer hands, the landholder becoming poor, and its cultivator becoming less free. For proof of this, we need only look to history for the course of things in Egypt, Greece, and Italy, or to the newspapers for that in Ireland, where the landholder becomes pauperized as the labourer becomes enslaved.

Why this is and *must* be so may readily be explained. In order that land may increase in value there must be increase in the quantity of its products, and in their exchangeable value, and that such increase may take place there must be increase of population, which cannot be the case when all are engaged in agriculture. That such increase may take place the consumer must take his place by the side of the producer. The farmer who is obliged to take his corn to distant markets exhausts his land, and is then obliged to fly to lands still more distant from market, and the exchangeable value of his products diminishes; whereas, he who has a market at his door improves his land, and obtains a constantly increasing return to labour, and the value of his products in exchange for other commodities is constantly increasing, and labour yields, therefore, a constantly increasing return of the necessaries, comforts, and luxuries of life. The one obtains small crops of corn, which he sells at 15 or 20 cents a bushel. The other obtains large crops, and sells at 60 or 70 cents. The cost to the latter of raising a slave would be so great that it would never be repaid, whereas to the former it would be so small that he could afford to raise slaves for sale, and thus the necessary consequence of increase in the quantity and value of the products of the earth, and increase in the value of land—the *immovable* property—is a diminution in the exchangeable value of the slave—the *movable* property—and

therefore it is that with the increasing productiveness of labour, and value of land, the involuntary labourer passes gradually into the voluntary one, the slave becoming free as the master becomes rich.

With every step in the contrary direction the reverse is the case. The man who has exhausted his land abandons it to seek for other land to be again exhausted. He attaches no value to the *immovable* property, but he values greatly that which is *movable*—his slave—and the more distant he is from market the lower will be the exchangeable value of his products, and the less will be the cost of raising slaves. Depopulation, diminished productiveness of labour, poverty, and pro-slavery go therefore hand in hand with each other, while with every step in the increase of population and wealth there must be a growing tendency towards freedom. In the one case slavery will be regarded as "a blessing," while in the other it will be deemed to be a blight, if not a curse.

The careful students of the *Wealth of Nations*, of whom, however, the number is very small, do not need to be told that these views are in perfect accordance with those of its illustrious author, who looked with great affection on the small proprietor cultivating his own land, and on the sturdy yeoman in the enjoyment of the independence and respectability that he saw were naturally consequent upon increased productiveness of agriculture, resulting from the combined exertions of artisans and agriculturists, any interference with which he denounced as "a manifest violation of the most sacred rights of mankind." It was the perfect knowledge that he possessed of the fact that diversity of employment was indispensable to the growth of agriculture that led him to reprobate, as "only fit for a nation of shopkeepers," the system which had for its object that of compelling all the nations of the world to make their exchanges in British markets. He saw clearly that with increase in the proportion of mechanics to agriculturists there was a great increase in the domestic market, with diminished *necessity* for resorting to distant ones, while *the power* there to go was constantly increasing, because the workman who ate the food converted the wool into cloth and fitted it to be cheaply transported—and therefore it was that he regarded every measure tending to prevent increase in the ratio of mechanics to agriculturists as "a great discouragement of agriculture," and every one tending to compel the foreign agriculturist to dispense with the proximity of the artisan as a violation of man's most "sacred rights."

His system and that of the South are the antipodes of each other. The one looks to bringing the consumer to the side of the producer, increasing population, augmenting the value of land, and increasing the freedom of man, with constant increase in the *power* to trade. It is anti-slavery in all its tendencies. The other looks to separating the consumer from the producer, dispersing population, diminishing the value of land and the freedom of man, with constant increase in the *necessity* for trade, and diminution of the power to trade. It is pro-slavery in all its tendencies, because of its most exhausting character. Instead of encouraging the mechanic to come and settle near them, bringing the market to their doors, and enabling them to improve their land, the people of the South have kept him at a distance, and have compelled themselves to seek distant markets, and their lands have been exhausted, the consequence of which has been a necessity for seeking other lands; and therefore it is that the *movable* property—the slave—has tended to rise in their estimation as compared with the *immovable* property—the land: the strongest evidence that could be given of the suicidal character of Southern policy.

How it has operated upon the older Southern States, up to the date of the last census, may be seen from the following table, in which is given in thousands, the movement of their population:—

	1790.	1800.	1810.	1820.	1830.	1840.
Maryland, . . .	319	341	380	407	447	470
Virginia, . . .	748	880	974	1065	1211	1239
North Carolina, . .	393	478	555	638	737	753
South Carolina, . .	249	345	415	502	581	594
. .	1,709	2,044	2,324	2,612	2,976	3,056
Per centage of increase,		20	14	12½	14	3

We here see that those States continued to grow in wealth and population up to the period of the census of 1830, and up to that period there existed no abolitionism—no free soil party—nor had the mass of the people of the South the remotest idea that slavery was other than a blight. The following decennial period is marked by the flight of nearly the whole annual growth of the population of those States, and with that flight came pro-slavery, necessarily followed by Northern agitation, because it was a consequence of the adoption of a policy directly opposed to their best interests. The Nashville Convention dates anti-slavery agitation back to 1834, and it was exactly at that period that the institution of domestic slavery began to be lauded as "a blessing." We see thus that an increased tendency to the dispersion of southern population, pro-slavery, and abolition, came into existence almost at one and the same time, and that the two latter were a necessary consequence of the former. If, then, we can ascertain the cause of that tendency to dispersion, we shall be at little loss to determine why it is that public opinion in the two sections of the Union has been so rapidly moving in opposite directions, until at length we have arrived at a point that seems almost to forbid a settlement.

Up to 1824, the political economy of Adam Smith—that which regarded the separation of the mechanic and agriculturist as being in a high degree detrimental to the progress of agriculture—was held to be democratic policy, and the opposition to it was deemed anti-democratic. The tariff of that year received but five votes in the four States of Maine, New Hampshire, Massachusetts, and Rhode Island. That of 1828 received but little more than one-third of the votes of New England, while the opinion of Mr. Madison in favour both of the *right* and the *expediency* of legislation with a view to protection, was then recorded in his letters to Judge Cabell. Such likewise was the opinion of General Jackson, and so long as democracy and protection were held to be consistent with each other—and the tendency of measures was consequently in that direction—there existed comparatively little tendency to the dispersion of southern population, and neither anti-slavery nor pro-slavery was heard of. Agitation on the subject was unknown.

The year 1832 brought with it nullification, and at the instance of South Carolina the policy of the Union was changed. From that year rail-road iron was free of all duty, the iron manufacture was prostrated, and the progress of other manufactures gradually diminished, until at length it ceased. Almost the whole energies of the nation were devoted to making roads by which to enable the farmer *to go* to market, and to enable his customers to fly to the West, there to become his rivals, instead of building mills and furnaces by means of which the market should be made *to come* to him. Dispersion was the order of the day. The slave population was scattered over the whole South, and the free population scattered throughout the West, with constantly increasing necessity for roads, and a constantly increasing diminution in the power to labour with advantage, the result of which was seen in the total prostration of 1842. Examine these facts and satisfy yourself, as I think you can, that diminution in the value of the land of the older southern States, and consequently in the wealth of their people, has kept steady pace with the growth of pro-slavery, and that both owe their existence to the abandonment of the

policy advocated by Adam Smith and his followers, Jefferson and Madison, which looked to placing the mechanic by the side of the food, thus diminishing the cost of transportation and increasing the power to maintain trade.

In 1820, the population of the States south of Virginia and Kentucky, including all those in which cotton is grown, was 2,300,000. In the ensuing ten years, it increased about 900,000, while the older Southern States, Maryland, Virginia, and the two Carolinas, increased about 600,000, and thus the proportions of all were fairly maintained. In the following ten years, the desertion of the older States became so complete that their growth was but 80,000, while that of the States south and west was a million, and the result was that the year 1840 exhibited the extraordinary spectacle of a population little larger than that of New York and Pennsylvania combined, occupying the whole country south of Virginia and Kentucky, with an area of about half a million of square miles, being almost five times as great as the area of those States, and yet so anxious after territory that they were ready almost to go to war for the purpose of securing Texas. The census now about to be taken will exhibit still more extraordinary results, for it will give a population not greatly exceeding that of those two States occupying not only that half million of square miles, but Texas and its immense surface in addition, and yet so anxious for further territory as to be grasping after California, and ready almost to go to war with the rest of the Union for a part of New Mexico, and with each and every step in the progress of depopulation, slavery is held, and necessarily held, to be more and more "a blessing."

Maryland, Virginia, North Carolina, Kentucky, and Tennessee, grow chiefly food, and the men who mine coal, and make cloth and iron, are consumers of food. The closing of the iron works of Pennsylvania and Virginia, and of the North generally, and the total stoppage in the progress of manufactures throughout the Union, tended to diminish the number of consumers of food, and to compel the makers of cloth and iron to disperse themselves over the west, that they might there become producers of food, the necessary consequence of which was a diminution of demand for the products of the Northern slave States, followed by a tendency to abandon the land and remove further south, there to cultivate cotton. The closing of northern mills and furnaces tended therefore to increase the number of cotton producers, and to diminish the number and the power of cotton consumers, and to render the South more completely dependent on Great Britain for a market in which to sell cotton, and to buy cloth and iron, and with each and every year its people have been giving more and receiving less in exchange, with a tendency to further exhaustion, impoverishment, and dispersion, followed by an increase in the pro-slavery feeling. What have been the results, as shown in the value of cotton compared with that of cloth and iron, I will now show.

	1815 to 1817	1827–1834	1845–1846.
Cotton consumed in England, lbs.	100,000,000	275,000,000	596,000,000
Value,	£8,000,000	9,000,000	11,400,000

She pays for this in cotton-cloth and iron, the prices of which, at these periods, were as follows:—

A piece of calico, of 24 yards	16|6*	7|6†	6|7
A ton of merchant-bar iron	£11‡	£7 5	£9 10

* McCulloch's Statistics, Vol. II. p. 70.

† This is the average of the years from 1831 to 1834, as given in Burns's Commercial Glance, and copied in the Merchants' Magazine, Vol. XIX. p. 277.

‡ Average of 1817 to 1819—Merchants' Magazine, Vol. XX. p. 337.

Had the whole been paid in these, the planter would have received of

Cloth, pieces	9,700,000	24,000,000	34,700,000
Or iron, tons	730,000	1,250,000	1,200,000

The *additional* freight, home and foreign, charges, commissions, &c., in the last period were, at three cents per pound, on 496,000,000 of pounds, say $15,000,000. For this the planter would receive, *in Liverpool*, 470,000 *additional* tons of iron, the value of which, in Liverpool, at the present moment, would be about $11,000,000, and thus he not only gave away his cotton, but gave with it a large portion of the cost of transportation. *The whole return to him for* 600,000,000 *was not as great as it had been for* 100,000,000.

It thus appears that notwithstanding all the improvements in manufacture, the planter had to give in the last period *six times* the quantity of cotton to obtain *three and a half times* the cloth that he could have had in the first—and *six times* as much to obtain a *smaller quantity* of iron.

The tobacco trade shows precisely similar results. In 1822, we exported 83,000 hogsheads, and the price was $74 82, yielding about $6,200,000. In 1845, we exported 147,000 hogsheads, and the price was $50, yielding $7,350,000. Deducting the extra expense of transportation to the place of shipment, the producers received less for the large quantity than they had done for the small one. From 1830 to 1835, the export averaged 90,000, and the amount was $6,200,000, yielding to the producer, on his plantation, as much as the larger quantity in 1845. The sum of $6,200,000, at these two periods, would have bought in Liverpool:—

1830 to 1835,	pieces of cloth,	3,300,000,	or tons of iron,	200,000
1845,	"	"	3,900,000	"	130,000

The planter is giving almost two-thirds more of tobacco for twenty per cent. more cloth, although his brother planter is almost ruined by the low price of cotton; but in the case of iron it is worse, for he gives two-thirds *more* for thirty-five per cent. *less*, and this result is the natural consequence of Southern commercial policy. With every increase in the tendency to found, or to occupy, new States, the exchangeable value of Southern products must diminish in its ratio to population, and the pro-slavery feeling must increase.

It is usual to attribute the fall in the price of cotton to too rapid an increase in the *production*, but the real cause is that *Southern policy has prevented increase of consumption*, because it has tended greatly to diminish the power to produce commodities to be given in exchange for it. The quantity of cotton produced has done little more than keep pace with the increase in the population of the States in which it is grown. Twenty years since the latter was 3,200,000, and the production was almost 400,000,000 of pounds. Now, the occupants of those States must number about five millions, and the average crop of the last five years is scarcely more than 800,000,000 of pounds. The growth of production has thus been slow. If next we compare the prices obtained in the ports, at the different periods, and set off against them the extra transportation incident to the occupation of so vast a surface by a small population, we shall be compelled to arrive at the conclusion that the return to labour, per head, is far less than it was twenty years since, and thus that dispersion, diminished value of land, poverty, and pro-slavery have come together, and that necessarily. The remedy for all is to be found in the adoption of a policy that will bring the consumer to the side of the producer, and enable the landholder to grow rich as his slaves become more free. That done, pro-slavery and anti-slavery agitation will pass away, as they came—together.

How essential to the South is a change of policy will, I think, become obvious to you on a retrospect of the proceedings of the last twenty years. It was

in 1821 that it extended its area by the purchase of Florida. From 1835 to 1840 it was proposed to incorporate Texas, but the proposition was repeatedly declined. A treaty for that purpose was then made, but it was rejected by the Senate. Finding that constitutional measures would not accomplish the object, unconstitutional ones were resorted to, and Texas was admitted by a mere majority, and to this the North submitted. War was then made on Mexico—a Southern measure, having for its object the acquisition of more slave territory. California was bought. All of these were pro-slavery measures. During all this time the North made no effort to annex Canada, but had it done so, and had it pursued the same course as was pursued in relation to Texas, what would the South have said and done? Would it not have threatened resistance and dissolution? Would its members not have banded together with a determination to stop all legislation? What did the North do? Nothing! With the single exception of the proposal to prevent slavery from passing its present limits, a *defensive* measure, nothing has been done or attempted to be done during all the period in which the South has been thus engaged in *offensive* measures, for the forcible acquisition of territory to be used for the accomplishment of Southern objects. Northern members have never banded themselves together to stop all legislation even when intended exclusively for the promotion of southern objects deemed most likely to be injurious to northern interests. Nevertheless the South complains unceasingly of "aggressions," and it does so because its whole policy tends to weaken itself, as further continuance in the same direction must continue to do. The more territory it obtains, and the more it is allowed to pursue its own course in the acquisition of territory for the accomplishment of southern objects, the louder are the complaints against the North, *which has never bought a foot of territory, nor sought to obtain one by any other course than that of its peaceful occupation.*

We see thus that with every step in the progress of depopulation, impoverishment, and weakness, pro-slavery grows, and the measures proposed for the maintenance of "the domestic institution" become more and more dangerous to the Union *and to itself.* It is now deemed necessary to annex Cuba, and the present year has seen no less than two expeditions for that purpose, both patronized by the South, and the latter of them defended even on the floor of the Senate. Now, if there be any one measure better calculated than any other that could be devised for weakening and impoverishing the South, it would be the annexation, even if peaceably accomplished, of Cuba. Nothing has thus far saved the cotton planter from ruin, but the withdrawal of part of the population to be applied to the sugar-culture, which would perish at once were Cuba admitted into the Union, and then the force now employed in producing sugar would have to return to cotton, although the cotton planter is now saved from ruin by nothing but an occasional short crop. *The pro-slavery feeling, however, overrides all prudential considerations,* and the probability is, that we shall see a revolution in Cuba, produced by pro-slavery agitation, and followed by the emancipation of all the slaves of that island.

The annexation of the Cuban slaves would increase *the supply* of cotton and diminish its price. The annexation of every European immigrant tends to increase *the demand* and raise its price, and yet pro-slavery leads the South to seek the former and to interpose obstacles in the way of the latter. The consumption of cotton, per head, within the Union, is about *fourteen* pounds. In Ireland, it is little more than *one.* Half a million of Irishmen, or of Germans, within the Union, would consume seven millions of pounds, and such an importation of men *for only ten years,* would give, with the natural increase, a population that would consume more of our cotton than is now con-

sumed by the whole population of Great Britain and Ireland. *At ten cents a pound, the latter cannot consume more than about eighty-five millions of pounds,* and the power to pay for it is steadily decreasing.* Immigration trebled from 1831 to 1835; and it did so again from 1844 to 1847. Under the compromise, it became stationary. *It is now steadily receding,* and thus it is that while the whole policy of the South tends to increase the number of cotton producers, it tends to diminish the number and the powers of cotton consumers. Had the growth of immigration for the year 1846–7 to the present time been the same as in the four previous years, it would be this year *six hundred thousand,* making a market on the land for the products of the land to the extent of *sixty millions of dollars;* whereas, there is now every reason to believe that it will not greatly exceed *two hundred thousand,* and thus will the farmers and planters of the Union be deprived of a market to the extent of *forty millions of dollars.*

The average cost of raising the people who arrive in the Union exceeds one thousand dollars, and it is the most valuable species of merchandise that we can import, *because it is the one that adds value to land,* and yet it costs us nothing. The immigration of the present year will be less than it should be by 400,000, worth, at $1,000 per head, *four hundred millions of dollars,* and the Union will be poorer than it would otherwise have been by this whole amount—and probably much more; and all this loss is due to pro-slavery commercial policy. I beg you now to determine for yourself how much so great an interference with the growth of capital tends to diminish the power of the people of the Union to make a market for your great staple.

From 1842–3 to 1847–8, the domestic consumption rose from *less than eight* to almost *fourteen* pounds per head. It is now stationary, with a tendency downwards, whereas it should have grown to *almost twenty pounds* per head, which would give, with a population of twenty-three millions, a home demand for 400,000,000, or almost half of the crop. What then would be the price of cotton? Let it be observed that *every advance of price resulting from increased demand, increases our power to consume, because it is attended with general prosperity.* English merchants caution us against advanced prices, because they "check consumption," but the sole cause of diminished consumption is the inability of England to increase her production of commodities to be given in exchange for it. The reverse would here be the case. *The richer the planter grew the more iron he would need, and the more iron that was needed, the more cotton would be consumed.*

Fortunately for the South, the government lent no countenance to the Cuban scheme, so pregnant with ruin to Southern interests. Fortunate for it would it have been had the late administration acted towards Mexico as the present one has done towards Spain. The sole good fortune to the South in all the recent movements, consists, as I think, in the extensive failure of its views in regard to territorial aggrandizement. A large portion of Texas is unfit for slave cultivation, as is the whole of the recent acquisition from Mexico. Had it been otherwise—had New Mexico and California been a new Alabama and Mississippi—the effect would have been to produce a still more rapid dispersion of population, attended with a great diminution in the value of landed property in all the States east of the Mississippi, a diminution in the return to labour, and diminished strength, the natural accompaniment of which would have been a very rapid increase of the pro-slavery disease in one part of the Union, and of the anti-slavery one in the other. The result might then have

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Crop.	Price.	British and Irish Consumption.
1841	10·3 cents.	97,000,000
1842	8·2 "	97,000,000
1847	10·1 "	77,000,000

been war between the two sections of the Union, but certainly as I think a dissolution of the Union, next to war the greatest calamity that could befall the South, whose only security is to be found in the establishment and maintenance of harmony.

I pray you now to examine these facts and determine if further progress, in the present direction must not be attended with increased weakness on the part of the South, and increased danger to its institutions, and further to determine if a result widely different would not have been obtained by a continuance of the policy of 1828. Had the mining of coal and the manufacture of iron gone on, would Virginia have been depopulated? Had South Carolina built factories, would her population have ceased to grow? Had they rendered available their water power, their fuel, their ore, and their limestone, would their lands have so greatly diminished in value? Would the whole South now be seen holding meetings with a view to endeavour to diminish the product of cotton? Would it not, on the contrary, be now rejoicing in the increased facility of obtaining both cloth and iron, and the increased power to raise food and cotton consequent upon having brought the consumer to take his place by the side of the producer? Would not the slave be now feeling the benefit in his improved condition, and the master in the increased value of his land? Would not the questions of anti-slavery and free soil have remained as undisturbed as they were twenty years since? Would not the harmony that once existed between the North and the South have been maintained? That it would have been so is, I think, beyond a doubt.

The whole difficulty, be assured, *lies in this question of commercial policy.* The South is constantly weakening itself, and therefore it is that pro-slavery and abolition grow. It has wasted more labour in settling new States, and making new roads through them, than would have built furnaces and mills to make *five times over* all the iron that is made in Britain, and convert *five times over*, all the cotton that is grown in America. It wastes, *annually*, more labour than would mine all the coal, smelt all the ore, roll all the iron, and make all the cloth, made in Britain—and to this enormous waste of labour are due exhaustion, dispersion, weakness, thirst for territory, pro-slavery, and jealousy of its Northern brethren.

Had the labour thus wasted been applied in the States east of the Mississippi, and north of Florida, leaving Missouri, Arkansas, Texas, and Florida for future settlement, what would be now the value of land in the older States? Would it not be double what it is at present? What would be the effect were it now to be so applied? I pray you to answer the question, and then determine for yourself how much the South has paid for almost twenty years of southern policy, and why it is that pro-slavery grows at the South, producing abolitionism and free-soilism at the North. That done, determine if the South does not owe it to itself to adopt a system of policy that shall bring about harmony with the North, and security to itself.

It is time that it should terminate its dependence on the market of a country whose production does not, cannot, keep pace with our own, and which, therefore, has, *and must continue to have*, in each successive year, less to give in proportion to what it desires to receive. The adoption of the policy needed for the correction of the oppressive system that was denounced by the author of the *Wealth of Nations*, would bring the market home and enable it to consume on the land a large portion of the products of the land, its exchanges being chiefly made with a people whose productive power increased as fast, if not even faster than its own, so that instead of giving more and receiving less, it would be giving less and receiving more. Let the South now do this—let it make itself independent—and the lands of the South will speedily double in value, and the world will cease to be astonished by the declaration of its belief

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that slavery is "a blessing," and then it will cease to hear of abolitionism or free-soilism, because harmony will then have been restored. The people of the South have no friends like those whom they ruin—no enemies like those whose favour they court. Let them look to cultivate the friendship of those who are willing to be their friends, and they need care little for their enemies. Let them fail now to do this—let them continue to compel the majority to obey the will of the minority—and the result must, as I think, be most disastrous to themselves and their institutions—to both the slave and his master. Their safety is to be found in the continuance of the Union, and in that alone, and the Union cannot be maintained if the few shall continue to govern the many, to the ruin of all. Review, I pray you, the whole proceedings of the South, and satisfy yourself, as I think you may, that every step it has taken during the last twenty years has tended to diminish its strength, and then determine whether or not I am right in asserting that it never can be strengthened until it shall learn to act in harmony with its only friends, the people of the North.

And now let me add a few words on the tendency of public opinion on this subject, as manifested in the last twenty years, with a view to forming a judgment as to the future.

The tariffs of '24 *and* '28 *were the work of the always democratic Middle States.* Gen. Jackson's faith on this subject was that of those States. He believed with Adam Smith, that the British system was "a manifest violation of the most sacred rights of mankind," and a great "discouragement of agriculture"—that we had been too long "dependent on the policy of British merchants;" and that it was our duty to provide a better market "for our surplus produce," by diversifying the pursuits of our people—and his opinion on the subject was fully and freely expressed. He transferred to his successor the support of a party as powerful as any that has ever yet existed in the Union; and yet that successor, when a candidate for re-election, received a most signal defeat, *because he had departed from the old democratic faith.* The election of Mr. Polk was due to representations that he was more favourable to protection than Mr. Clay, and but for those representations, he would have been defeated. He gave us the tariff of '46, and the result of this subjection of the majority to the will of the minority, was seen in the election of General Taylor, who holds to the old democratic doctrine of the Middle States, which teaches now, as it has always taught, resistance to the British system; and it is as a believer in that doctrine that he will be re-elected, if a candidate.

The Middle States have received, and are receiving, from the tariff of '46, a lesson that will not be soon forgotten, while both at the North and South there have been great changes, and greater ones will yet take place. Many of the warmest friends of the tariff of '42 came, as you know, from Southern States whose delegations had been unanimous in their opposition to that of '28, and every new mill that is built makes converts, because the advantage of bringing the consumer to the side of the producer is thus made manifest. Judging of the future from the past, is there not, then, good reason to believe that *until we shall have conquered freedom of trade* by the annihilation of the monopoly system by aid of which Great Britain has taxed the farmers and planters of the world, no candidate for the presidential office will ever receive a majority of the votes of the people who is not known to be honestly, and decidedly, favourable to the doctrine which teaches that resistance to the British system is as much the duty of the men of 1850, as it was of the men of 1776?

Ten years of adequate protection would accomplish that object by placing

the manufacturing industry of the Union at the head of that of the world; whereas a century of the present system will fail to accomplish it.

I pray you now to look to the fact that the only two cases in which candidates for the presidency have avowed themselves advocates of what is now called free trade, *which consists in sustaining the English monopoly system*, were those of Mr. Van Buren, at his second term, and of General Cass, and that both of them were defeated, although the nominees of a party that has known no other defeat in half a century—and then determine for yourself how long it will be before there will be another candidate for the presidential chair *bold enough* to claim popular support on the ground of his willingness to sustain the system which Adam Smith denounced, and against which the people of '76 rebelled.

I am yours, very truly,

——— ———.

GOOD FARMING—WHAT IT CONSISTS IN—ONCE FOR ALL.

THE principles upon which good farming is founded are few, plain, and intelligible, the whole of them being comprised in four simple operations, viz. making land dry, clean, fine, and rich. All the works of our most eminent agriculturists, all the discussions at our great shows, all the performances of our best farmers, have served only to elaborate these four processes. It is not by taking any of these separately that good farming can be attained, but rather by a happy combination of the four put together, and by a judicious adaptation of the parts to the whole. It may here perhaps be of use to bring into a small compass the leading points of each process. 1st. Draining is intrinsically important, not only in doing good of itself, but likewise in being essential to the well working of the other three. Stagnant water, under any circumstance, must be injurious, but by the removal of it further advantages are obtained. When the land is laid dry the work of the plough may be going on at most seasons of the year; the soil is brought into a more friable state, and it does not become so consolidated from a heavy fall of rain. Such are its advantages, that the expense may often be repaid in a single year. 2d. Land being kept clean is one of the first things in good farming. It would seem needless to say that weeds take from the soil that strength and fertility which ought to be reserved for the crop alone, were it not that the dirty farming prevailing in so large a part of the kingdom seemed to set this truism at defiance. On drained land weeds are easily eradicated or killed; and if this be once done effectually there will not be much trouble in the matter afterwards. A proper rotation of cropping will attain what is here wanted, with ease and advantage; the introduction of the green crop system has much facilitated this operation. The old fallows being now discontinued on almost all lands, a well worked crop of turnips or beans will equally serve the purpose of ameliorating the soil by frequent turnings, and perhaps keep it clearer by the overshadowing they create than can be be done by its being baked even by a hot sun. It is too often supposed that the clean green crop named is all sufficient for effecting the purpose alluded to, and that the corn (grain) crop following may be left to itself, but this may be considered a great error. There *can be no reason why a crop of corn (small grain) should not be kept just as clean as a crop of turnips*, and modern inventions have so facilitated this matter, that there can be no excuse for bad farming in this particular. If the corn crop be grown in drills (and there certainly can be no pretensions to the higher order of farming without drilling), by the use of Mr. Garrett's horse-hoes, and followed by Dr. Newington's hand-hoe cultivator, the land may,

with little trouble and expense, be kept perfectly clean and friable.* This brings us to the 3d section, that of tillage, which is perhaps about the most important of the whole. Nothing can show more the low state of farming in general in this country than this very process. The drill system was invented more than a century ago by Jethro Tull, yet at the present time in many parts it is not practised: in others it is not even understood. The object of this is not only to give such an equal distribution of the seed in sowing that each root may have its proper share of nutriment from the soil, but, by the plants being grown in rows, a clearer space is given for working the soil, by which it is not only rendered more friable for the spread of the fibres, but it is cleaned from the superfluous growth of weeds. This friable state of the soil is not only required near the surface, but by deep stirring must give ample room and facilities for the roots to shoot their fibres to the extent they will do under favourable circumstances. The high authority already quoted considered that one or two ploughings were good, but a third ploughing better, and a fourth best of all, as it was by the extreme diminution of the different particles that he was able to grow good crops of wheat (more than 30 bushels per acre) for 12 years running on the same soil, without an atom of manure. This brings us, lastly, to the 4th part—making land rich. And here, though it may be possible to grow successive corn crops without manure, yet no one will deny that by judicious management and the application of suitable manures, the bulk and goodness of the crop may be greatly increased. Infinitely more attention is now paid to this branch of farming than it used to be formerly. The farm-yard and buildings are better constructed. Much of the old system of constantly turning out the cattle is by degrees wearing out, and more dung and of a better description is made. The turnip culture has greatly contributed to this, as, if green crops be raised, it is in most cases indispensable that cattle should be kept to consume them. The profits of a farm are perhaps chiefly dependent on the quantity of dung made and at command, as though in bad farming much of it may be either wasted or misapplied, yet in that of a superior order the crop, be it green or grain, may be so forced and increased by the application of rich fertilizers as to put three or four times the money into the farmer's pocket, that could be done without it. The discovery of guano has been highly favourable to the farmer's profits; about 3 cwt. of this, costing about 30*s.*, will go as far towards raising a good crop of turnips as perhaps 10 or 12 tons of dung. Bones with sulphuric acid have been found still more economical than guano.† There are also a number of artificial

* It gives us pleasure to announce, what we should have expected of him, that Mr. Colt, of Paterson, New Jersey, has sent for one of Garrett & Son's Horse-hoes. If too complicated, we have little doubt that, like the English drill, it will be simplified by some of our ingenious mechanics, and adapted to use in this country; and the credit of its introduction into use in that case, will be a "partnership concern" between the importer and the improver. Mr. Colt will also, we doubt not, import one of Dr. Newington's "hand-hoe cultivators," and his hand-dibble. The American Institute ought to import such things for exhibition; but while men, women, and children, attend by hundreds of thousands their Annual Fairs, they give public notice, that all who wish to seek of them information as to the great Industrial Fair of the world, must—*pay postage!* cheap as that is! There is, said Napoleon, sometimes "but one step from the sublime to the ridiculous," and here it is. A notice to American Inventors by the "*American* Institute," of a great Industrial exhibition, bringing the genius of all countries into competition, and in regard to which, an Institution nominally *national*, "THE AMERICAN INSTITUTE,"[2] will give such information as it has (the same that every one else has), but mark ye—Mr. Inventor—you must be careful to "pay postage"—10 or 5 cents, as it may happen! What an exhibition of public spirit! Prodigious! Especially for "the Foster-mother of the arts,"

† And how slow has been the progress in the use of guano. Here in the United States it has been distributed, and its virtues proclaimed by us in the old American Farmer, twenty years before it was proved in England.

manures composed of various ingredients, which at least profess to be cheap and useful. Soot, too, which may be bought near the large towns at 2*d.* the bushel, is an excellent stimulant, and when mixed with different alkali, will force a quick and luxuriant growth in most plants. The different processes now named should be the chief objects aimed at by every farmer, who wishes to make his pursuit not only creditable to himself, but profitable as a pecuniary investment. Some splendid specimens in this line have been lately exhibited, and it has been proved from undoubted authority, that the profits arising from it are such that they may be made to counteract many of the disadvantages under which the farmers labour at the present time. At all events, if high farming will not answer, low farming never can. If 40 bushels of wheat (not an exaggerated quantity) are grown, where only 20 bushels (a very common quantity) were grown before on an acre, it is not saying too much that this will amply counterbalance the present fall of prices. By an improved system the greatest benefit will accrue both to landlord and tenant, but to be going on in the old beaten track, and to neglect the opportunities which science, combined with capital, holds forth to an enterprising spirit, must be ruinous to both. It therefore becomes the duty, as it is the interest, of the landed proprietor, to give encouragement to modern improvements, and by co-operating with tenants of intelligence and ability to work out the four processes here described, and thus bring his undertakings to a successful termination.—LAW. RAWSTORNE, *Penwortham, May* 15.

UNLOADING HAY AT THE BARN.—The following, which we find in the Boston Cultivator, is that sort of thing that one likes to meet with, because it is not merely new, but has every appearance of being really useful.

The writer thus describes a process for stowing hay, which he says is vastly more economical of time and labour, than the usual way of throwing off the load, by forks-full at a time. The cost, he says, of the apparatus is only $15, which, he adds, it will save in the unloading of the first fifty tons:—

"The improvement consists in removing one-half the load at a time, from the wagon to the mow, in one entire body, by means of a windlass, and thus saving all that vast amount of strength and exertion, which is at present expended in separating the forks-full from the load. On commencing the loading, a web, or piece of net work, made of small rope, and resembling in appearance the cording of a bedstead, is spread over the bottom of the wagon, and the hay is loaded on it, until the load is about one-half on, when another web, similar to the first, is spread over the top of that, and the remainder of the load is placed on it. On arriving at the barn, a rope, which passes through a pulley, suspended to the ridge, directly over the mow in which the hay is to be placed, and extends down to the windlass, is hitched to the outer edges of the uppermost web, and then, by means of the small windlass which is placed at the side of the floor, a man, the driver of the team, can elevate that half the load which is above the web, over the beam, and drop it into the mow, in the short space of two minutes.

The hay is dropped by unhitching one of the hooks that connects the rope with the web, by means of a small cord which is attached to them, and runs down to the windlass, so that the man there can drop it wherever he pleases; the windlass, rope, &c., can be removed from one barn to another in a few moments, so that one set will answer for any number of barns. Only one man is required to go from the field to the barn, as the hay being dropped in various parts of the mow, needs no stowing away, except an occasional levelling, which may generally be done in wet weather. With its assistance, one man can unload a ton with more ease in five minutes, than two men could have done in forty-five with forks. The apparatus, or further information respecting it, with a drawing representing it in operation, can be had of me; who am, yours, with a desire to forward useful improvements, J. A. H. ELLIS.

Rochester, N. Y.

ETHER AND CHLOROFORM IN VETERINARY PRACTICE.

THE following successful experiments upon cows, horses, and bees, with chloroform and ether, lead to the hope that rural economy is in various ways to derive great benefits from their use.

ETHER IN SPAYING COWS. (*Translated for the Patent Office Report by F. G. Skinner.*)—The extirpation of the ovaries in cows is attended with so much pain, and is so often fatal, that the operation has, in a great measure, fallen into disuse. Dr. Seifert, of Graschnitz, Upper Styria (Austria), operated upon two cows (previously rendering them insensible by the application of sulphuric ether) with entire success.

The animals were of the Murzthal breed. The first, four years old, had had two calves, and was of a lively brisk temperament; the second, of a quiet, docile disposition, was seven years old and had calved five times.

After causing the first cow to breathe the vapours of ether for three minutes, an incision of the skin was made on the right side. But it appeared that she was not sufficiently under the influence of the ether, for her struggles were so violent, that the operation had to be suspended and the ether applied again. At the end of five minutes the cow fell, but not remaining quiet more than two minutes, a third application was made and continued until she lost all sensibility.

The operation was then proceeded with and finished in eighteen minutes, or rather in eight minutes, deducting the time employed in applying the ether. Thus, in this short space, the incision of the tegument was made, the ovaries removed, the wound closed and stitched, and the adhesive plaster applied. The patient recovered all her faculties five minutes after the operation, and twenty minutes after the application of the ether. She entered the stable staggering slightly, where she refused the food and drink offered her. The second cow was completely torpid at the end of three minutes, but she remained upon her feet during the whole operation, which lasted ten minutes. In seven, she was in a condition to walk to the stable, where she immediately commenced eating.

The pulse and the breathing of both cows diminished a little while they were in the torpid state. The pupil turned down, and convulsive tremblings passing over the entire body, were particularly pronounced in the muscles of the skin. Involuntary alvine evacuations occurred, and a watery mucus flowed abundantly from the eyes and nose.

The result of these experiments goes to show that the success of etherization greatly depends upon the temperament of the animals submitted to it. Thus, the first cow fell down completely senseless, whereas the second remained passive upon her feet, so that the entire operation, cutting, excision of the ovaries, stitching, &c., was performed in the short space of ten minutes, and without the manifestation of the slightest pain on the part of the patient.

The fever, following the operation, was much higher with the first cow, and she did not ruminate (get her cud) until the evening of the same day. The other cow, whose functions all remained in a natural state, was milked on the same day, but the milk had a disagreeable flavour of ether.

Both cows were in perfect health three days after the experiment, but the secretion of milk with the first was not as great as in the second. The following table indicates the secretion of milk in each from the third to the eighth day, when the quantity remained stationary.

Days.	First Cow's Milk.	Second Cow's Milk.
3d,	2 quarts,	3 quarts.
4th,	4 "	3½ "
5th,	8 "	6 "
6th,	12 "	9 "
7th,	16 "	12½ "
8th,	20 "	16 "

It is to be remarked that the milk did not lose the flavour of ether until the fourth day. Such, says Mr. Halabeck, the reporter of these experiments, is the result of an attempt to which many agriculturists attach great hopes, because they see in it a powerful means of increasing the product of their dairies.—These experiments bear upon three important points in rural economy. 1st, an increased secretion of milk; 2d, a greater disposition to fatten; and 3d, a better quality of meat.

As to whether castration will cause cows to produce more milk and for a greater length of time than in the ordinary state, we have as yet made too few experiments to enable us to decide, but it is evident the operation will be exceedingly useful if these results are confirmed by additional experiments.

On the other hand, there can be no doubt spayed cows fatten more readily than others, and their flesh is more delicate. Another point, probably quite as important as the preceding, is, that cows are by this operation *better fitted for the labours of the field*, and this is a fact that should attract the attention of small farmers. From the preceding we may conclude that the use of sulphuric ether is a discovery that may be of vast importance to stock breeders and to dairymen, and that it certainly ought to come into general use.

Observations on the Efficacy and Method of Employing Chloroform in Veterinary Practice, and on a Case of Lock-jaw (Tetanus), successfully treated by Chloroform. By PEARSON FERGUSON, Esq., *London Lancet.*

Mr. Ferguson, after calling attention to the objections against the use of anæsthetic agents in veterinary practice, which have been stated by Messrs. Morton, Henderson, and others, remarks:—

"When, however, the details of these experiments are examined, it becomes at once plainly evident that they are remarkably defective in many particulars. The principal defect, however, is attributed to the apparatus employed, which has either allowed the free admixture of atmospheric air with the vapour in inhalation, or, on the other hand, has been so constructed and applied, as to cut off all communication with the atmosphere, and to compel the animal to breathe the same air over and over again. . . . . I must mention as the greatest difficulties in using chloroform with the horse, next to that of imperfect apparatus, are, the universal fear of lying down when labouring under sickness, and also the great danger of serious bodily injury to so large an animal falling in a state of intoxication. In my practice, therefore, in order to avoid these dangers, and to secure the perfect administration of the agent, I have always had the animal cast; after which somnolence may be obtained in a very short time by a method of the simplest nature, which not only secures the inhalation of pure chloroformic air, but also permits perfectly free and unimpeded expiration, and entirely obviates the danger of suffocation."

Mr. Furguson then cites the following cases:—A large, powerful, and irritable gray horse, the property of Mr. Hatfield, of Manchester, having disease of the fetlock joint of long standing, was cast on the right side. A piece of coarse sponge, of the proper size to fill the transverse area, was placed in the left nostril and saturated with chloroform, through which the animal inhaled the vapour, while the right nostril was closed with the right hand. Then expiration was performed by releasing the right nostril, and closing the one

containing the sponge with the left hand; and thus the alternate movements of inspiration and expiration, regulated by these manipulations, were allowed to proceed rather more than two minutes and a half, when insensibility was complete, the respiration having become exceedingly slow, the pupil much dilated, and the pulse somewhat increased in frequency. The leg was then fired most severely, the skin having been cut through in many places, but not the slightest symptom of pain was evinced. In this case rather more than an ounce and a half of chloroform was used. The somnolence continued for thirty minutes, when on sprinkling some cold water on the face of the animal, he got up and walked somewhat unsteadily to his box.

Case 2d—A valuable steeple-chase horse, sent from Liverpool by Mr. Wm. Harrison, who, on placing him under my care, informed me that he had been a long time lame, and treated in various ways without success. On examining him I concluded that the lameness was situated in the foot, and I suggested an operation as the only means likely to relieve it. To this, Mr. Harrison consented, and as the animal was exceedingly irritable, and the operation (excision of a portion of the middle plantar nerves) under ordinary circumstances was exceedingly painful, and somewhat difficult to perform, it was determined to put him under the influence of chloroform. He was therefore cast, as in the former case; the sponge saturated with chloroform was placed in one nostril, and inhalation being regulated in a manner similar to the foregoing, in less than a minute he was seen to be much affected. The breathing had become deep, the pupil dilated, and the pulse much increased, and in two minutes and a few seconds he had inhaled sufficiently and was quite insensible. The leg was then unshackled, and the operation performed on both sides the limb without symptoms of pain or the slightest struggle, although it was necessary to turn him over from the left to the right side.

After the operation, which occupied altogether little more than five minutes, he was permitted to remain down for some time, during which respiration was very slow, the pulse fell to the natural standard, and he appeared to be enjoying a sound sleep, with the exception of the eyelids not being properly closed. In this state he remained for about twenty-five minutes, when consciousness began to return. He was then excited to rise by dashing cold water on the face.

In several other cases chloroform was exhibited with similar success, and it only remains in this place to state, that the quantity required to produce insensibility, averaged an ounce and a half, and the time from the commencement of the operation until somnolence was about two minutes and a half.

I feel it necessary to direct attention to the circumstance, that in administering this agent, care should be taken to observe the state of the muscles of the neck; and on the depressors showing symptoms of being overcome by the force of the elastic ligament at the back of the neck (which will be evinced by the gentle drawing back of the head), the apparatus must be at once removed, for if insensibility be not absolutely perfect, it will certainly become so almost immediately and continue for some time. I believe that chloroform will, if judiciously applied, be found most useful as a remedial means in veterinary practice, more especially in diseases of a spasmodic nature. To this belief I have been led partly by theory and partly by an experiment, which I shall relate. Just prior to the introduction of chloroform, a highly bred bay mare, the property of Dr. Hatton, of Oxford street, in this city, was, during his absence in the country, attacked with tetanus (lock-jaw), and remained without medical treatment for four days, when my assistance was requested. On my arrival at the stable the poor animal was found to be affected with general tonic spasms to a most aggravated degree. The jaws were closed, the limbs stiff and immovable; the neck was drawn up and the tail elevated. The

stable boy mentioned that the mare had not passed any evacuations, or eaten or drank for three or four days. The hopeless nature of the case was evident. It was a good opportunity to try the effect of anæsthetic agents, and having obtained the consent of Dr. Hatton, six ounces of sulphuric ether were placed in an apparatus which was applied to the nose. This apparatus, like most complicated instruments, was not perfect, and permitted the access of much atmospheric air. Nevertheless, after half an hour's inhalation (imperfect though it was, even with the addition of five ounces of the ether) the muscles became so relaxed that she was on the point of falling, the eyelids being half closed, and respiration slow and not difficult. At this juncture, the apparatus unfortunately became detached and broken, and our experiment was frustrated; for the fright occasioned by half falling, coupled with the admission of free, cold atmospheric air to the lungs, aroused the mare from her stupor, and although the jaws had so far relaxed as to enable medicine to be given, and to admit of her taking a little gruel in the evening, the spasms returned, and paroxysms succeeded each other until the next morning, when she died, at seven A. M. Now, although unsuccessful in the result of this experiment, enough was elicited to induce me to conclude that, with a proper mode of administering the anæsthetic agents, we may reasonably hope for beneficial results not only in the treatment of tetanus, but also in spasmodic affections generally.

I have had an opportunity of testing the utility of chloroform in the treatment of spasmodic colic; and I can state that it is most beneficial when given internally, in doses of two drachms, with the same quantity of tincture of opium, and an ounce and a half of spirit of nitric ether. Were the term specific at all admissible in the practice of medicine, this compound as an antispasmodic, might have a fair claim to the designation.

The foregoing observations were written in the autumn of last year, but their publication has been unavoidably postponed to the present. Since then, I have had an opportunity of testing the efficacy of chloroform as a remedial agent in the treatment of tetanus, and the result has *fully answered my most sanguine anticipations.* Last month a carriage horse, the property of Mr. John Preston, of Manchester, was, after severe work and exposure to cold, seized with tetanus. The attack came on late at night, and I was requested to see him the following morning. On arriving at the stable, I found the animal unable to move about the stall, and "emprosthotonos"* was the form the disease had assumed. The head was drawn down to the level of the knees; the back arched; the hinder extremities being very much under the body; the abdominal muscles tense, and the pelvis drawn forwards; trismus, however, had not taken place. I at once decided to try chloroform, but not in such quantity as to make him fall. The apparatus was then applied (allowing a small quantity of atmospheric air to mix with the chloroform in inhalation, so as not to alarm the patient) and, after he had been inhaling for about four minutes, the gradual relaxation of the muscles and flank were really wonderful to observe.

He continued to inhale it for about fifteen minutes, by which time he broke into a sweat, and his head was raised to a level with his back, that being just the height at which the elastic "ligamentum colli"† will support it, unaided by muscular action. His legs, too, became quite flexible; and it appearing that he would fall if more were administered, the apparatus was removed. A very powerful purgative, and also an enema (injection) were then administered, and a large quantity of warm clothing being put on, he was left alone, with strict orders that he should not be disturbed. On examining him the

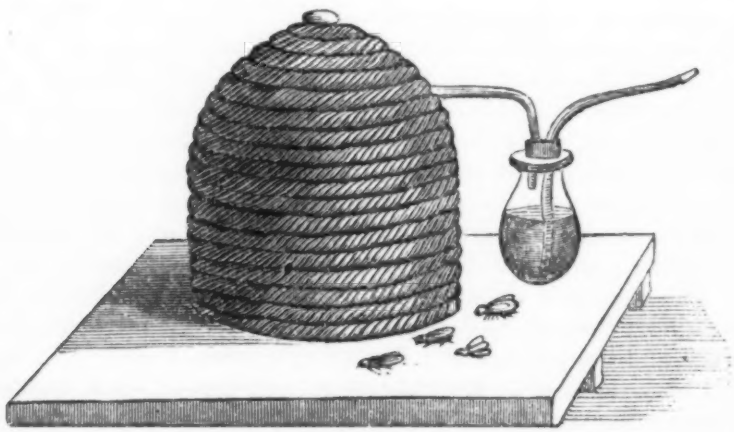
* This term is used when the disease is partial and affects only one-half the body.

† The tendon by which the head is supported.

following morning there were again some tetanic symptoms, but they were confined to the neck, and principally affected the muscles of the shoulders on each side. The chloroform was again had recourse to as before, and in about twelve minutes, having inhaled about an ounce of the agent, the rigidity entirely disappeared, and he purged profusely; from that time he went on most favourably, under the treatment most usually adopted in convalescent cases, and is now well.

ETHERIZATION OF BEES.—The idea of applying the vapour of ether to bees in order to get the honey without destroying the swarm, first occurred to Mr. Defays, professor at the veterinary school at Brussels. He had amused himself with experiments upon humble bees, and was struck with the facility with which these insects became torpid when made to inhale the vapours of sulphuric ether.

With a view to save the apiarist the annual loss of swarms of bees in taking their honey, he was induced to try the effects of ether upon them, at the time of emptying the hives. A beehive was procured and the vapour introduced by means of a simple contrivance of Mr. Defays' invention. This apparatus is composed of a glass globe, with an opening like that to an ordinary bottle; this opening is stopped with a common cork, through which two tubes are passed. One end of one of these tubes passes through the ether, with which the globe is partially filled, to the bottom; the other end is bent out at an obtuse angle, to render it convenient to the mouth of the operator. The second tube is merely passed through the cork, one end entering horizontally into the hive, by an opening that permits the passage of the air, but not the escape of the bees.



To introduce the ether into the hive in the form of vapour, all that was necessary was to blow the air into the globe through the tube, one end of which was submerged in the ether. At first, for a second or two, there was great disturbance in the hive, attended with a loud buzzing, but this gradually subsided, until it entirely ceased at the end of a minute. The hive was then lifted from the table, and the bees (having left or fallen from the comb) were found lying upon it in a torpid condition. The honey might then have been taken, but the object of the experiment being attained the hive was, at the end of fifteen minutes, returned to its place, the swarm being still in a state of insensibility. The time of their revival was not noted, but the following day the bees were as lively as usual.

THE TRADE IN PEGGED BOOTS AND SHOES—ITS HISTORY, AND ITS CONNECTION WITH AGRICULTURE.

IRVING HOUSE, *New York, July* 4, 1850.

THE man who keeps his eyes open, with a proper desire to make the most of this up and down journey of life, on which all are travelling to the grave as to a common goal, will often stumble, as it were, on curious and instructive facts, where he little expected to meet with them. Some days since, in a store in New York, chance threw in our way a little printed "Report," by J. R. Pitkin, 68 Broadway, David Stevens and John H. Cornell, "*commissioners of the American Union Company*," formed for what, does the reader suppose? Why, for manufacturing "*Staple or Pegged Boots and Shoes!*" Well, the curious facts disclosed in this Report are, among others, that in December of last year, Joseph Walker, of Hopkinton Massachusetts, who "made the first pair of pegged shoes ever seen in this or any other country," was still alive; and that he had gone on, making his pegged shoes and boots, for more than ten years, without competition; after which, while he was (as we hope he is) still living, the trade in the article had increased in his State, to the amount of $18,000,000 annually, giving, as stated in this Report, "constant, honourable, and profitable employment to 60,000 inhabitants" of Massachusetts! and yet, say the commissioners, the demand for this manufacture exceeds the supply; which, they urge, should now be met by the proposed Union manufactory in the city of New York, with branches in the surrounding country.

Now to a contemplative mind, how various and impressive are the reflections that arise, on a view of facts coming thus casually under one's notice. The first impulse is, to acknowledge the benefit to society, from this simple invention of an unpretending individual; now affording, as it does, employment and sustenance to so many thousands of his fellow citizens; and then one is led to marvel at the perversion of political justice, which continues to be practised all around us, in this boasted age of reason and of *progress!* For if, instead of inventing a process in shoe making, which secures to his State a business amounting to $18,000,000, and giving employment and clothing and sustenance and education to 60,000 men and women, Joseph Walker had invented a *rifle* or a *torpedo*, that would economically *destroy* 60,000 in a day, no honour would be deemed too high—no reward too great, for the inventor of the death-dealing implement. Whereas, who cares for—who, beyond the village of Hopkinton, will ever hear of Joseph Walker, the inventor of pegged boots and shoes? On men, some of them, be it admitted, true patriots in the true sense of the word; some of them, cosmopolitan vagabonds, without country or principle, and too lazy to work at any honest trade—men who volunteer or enlist, to march and carry death and destruction among distant and unoffending people; on all such men, besides their pay and rations, governments are ever ready to bestow rank and honours, lands and pensions. And yet, could the rising generations be schooled and educated as they should be, in the true spirit of Christian civilization, and in anything approaching to a just appreciation of the public welfare, (as they would be educated if the cultivators of the soil would compel the establishment of agricultural as well as military schools throughout the land,) we should then see public lands and public honours meted out, in something like a just and politic reference to the tendency of men's lives and actions to *promote the public happiness!* Notwithstanding all this flagrant perversion of the ends of wise government, and the dictates of sound policy, there is no measure of eulogy, that national vanity can conceive, which men deem adequate or sufficiently high-coloured to portray the excellence of those

"*republican systems*," under which such gross folly and injustice is enacted! But, to use a huntsman's phrase, we must "try back" from these moral and political reflections (in which even the tax-paying clodhoppers for whom we write would themselves persuade us they have no business to indulge), and endeavour to show, in terms so plain that every one may understand, how real is the connection between *making pegged shoes, and making Indian corn;* when both are made in our own country, where the parties feed and shoe each other, under a system of genuine "free trade," mutually and equally advantageous.

What facilities does Massachusetts possess over New York, for manufacturing pegged boots and shoes? Yet, as a general thing, to the farmers and planters of the whole Union, who get these boots and shoes (along with so many other things from New England), must it not be obvious, that were these $18,000,000 worth of boots and shoes made, as our iron and cloth are, in foreign countries, they would lose their home market for all the commodities consumed by the 60,000 employed in making them; and instead of getting them in exchange for that amount of raw hides, and beef, and corn, and flour, and cotton, and rice, they would have to pay for them in specie, or in evidences of public indebtedness, to foreign nations? Such is the great gain *to the nation*; let our manufactures be made where they may, so it be in our own country, and out of our own materials. It is to supplying this ever increasing demand in our own country, in fact, that we must look after all, as the sure guarantees of general agricultural improvement. *This* is the "free trade," free trade between citizen and citizen, all well paid for their labour, and therefore able *to consume much*, that we should contend for, in the first instance. But, says the Farmer and Planter of New York, and they say truly, if we can draw the lapstone and the workbench, as well as the Loom and the Anvil, yet closer to the plough and the harrow, will it not prove a yet greater saving of expense, in exchanging the products of them all; leaving yet more time and means, to the cultivators of the soil, for the improvement of their great machine of production—the land—in like manner as it is an admitted economy, everywhere coveted, to have the grist mill near the grain, the saw-mill near the timber, and the smith's shop near the farm? The fathers and grandfathers of the present generation of tobacco planters, formerly shipped their tobacco "home" to London factors, and ordered back hats, and saddles, and boots, and as low down as jugs of rum. That was when our subjection to the colonial policy of England was only a little more stringent than it is now, that Sir Edward Lytton Bulwer, and the millionaire, W. Brown, of "Richmond Hill," say we should by all means continue to send to "the great workshop" for our iron and cloth! God send that the time may come, as it should have come before, along with the Declaration of Independence, *this day 74 years ago*, that it will be deemed as absurd to send to "the great workshop of the world" for iron and cloth, as it would be now to send there for hats and saddles. Is it not conformable to the nature of things, and to common sense, that everywhere the light machines, the factories and the furnaces, used for converting the products of the earth into shapes for use, should come to the great machine of production, and use up its bulky commodities on the spot where nature planted them, instead of sending away the raw material in its rudest state, yielding to foreign nations all the profits of carrying them through every process and every modification, even to the last stroke of labour, and the highest polish of art?

Aye, would that we had the power to impress on the minds of our readers, as it deserves to be impressed, the great political and fundamental truth, that in every wisely administered government, the cardinal policy, the only policy that can secure general melioration and advancement, is that conservative

spirit in law-making, which leads the inhabitants of a country to *concentrate* and *combine* their powers and faculties and interests, in pursuits as *diversified as the climate and resources of the country will admit;* dispersing only as Bees, emblems of industry and wisdom, disperse when, and only when they are too much crowded; and then re-settling as near the old homestead as the means of sustenance and the offices of good neighbourhood will allow. In the very dawn of social organization, ere man has fairly escaped from the egg-shell of his original weakness and barbarism, the first dictate of common sense, the first lesson of experience is, that "two men can lift a log that one can neither roll nor lift," and as Peace, and the union of our faculties, are the great instruments for accomplishing the highest aims of social existence, so are they indispensable to the maintenance of public prosperity.

For nations of more limited geographical extent, and internal resources; or for nations whose territory, though extensive, runs through few parallels of latitude, and therefore comprises fewer elements of national independence, Providence itself has enjoined a different policy. Between such nations, the cultivation of a sense of mutual dependence, and a freer system of international exchanges, is indispensable to the supply of necessaries not otherwise to be had. But with us, how different! Look at our vast expanse from the Atlantic to the Pacific! Look at our natural capabilities! our boundless fields and pastures peculiarly adapted for the production of rice, sugar, cotton, wool; our inexhaustible forests of timber, and mines of coal and iron! our superabundant crops of corn and wheat, from Maine to California!

Why should we, increasing in numbers and in wealth; in the power of production and consumption, as no nation under the sun ever has increased; why should we make sacrifices, and live in colonial dependence upon nations oppressed in every form, and every year diminishing in their demand upon us and in their power to consume what we have to dispose of? No, let us force them to come and enjoy "free trade" with us, in our own country, where higher pay will make them customers worth having, to the Farmer and the Planter. Has it not been written in the book of our destiny, as by the finger of God himself, to these United States;—"Stand by each other, take care of yourselves first, your own means are adequate to the supply of every want, and the highest conceptions of human aggrandizement. Watch your rulers, restrict them in their expenditures, be jealous of armies and navies, and sinecures and pensioners! and *in the spirit of peace and of self-reliance, cultivate your own resources!*"

Well, gentle reader, it was to demonstrate these truths in the political economy of agriculture, and to propagate them, far and wide, that we undertook this work, seeking by its outward signs (figures of the Plough, the Loom, and the Anvil) to indicate its internal spirit; not meaning that protection against the under-fed and over-worked labour of Europe is any more necessary for the Loom and the Anvil, than it is for the lapstone and the trowel. The intention was thus only to signify at once, our settled convictions, that, contrary to the crude notions too prevalent in the country, there is in fact, *between all our industrial interests, when well understood, a perfect harmony;* protection and mutual support being essential to the prosperity of them all; not to give to any, the advantages of monopoly, but to place all on a footing of fair competition, against the monopoly of England, with which we have now to contend; a monopoly kept up by starvation and low wages to her operatives, as the reader may be abundantly convinced by turning to the first article of this number, where he will see their condition truly and faithfully described in colours to make any honest man's heart ache. Yes, reader, it is in the promising and increasing dissemination of these doctrines, that we are expending individually, the equivalent of 4000 bushels

of wheat, to maintain this publication; and it is for those who look to the establishment of the doctrines here contended for, as indispensable to our permanent prosperity to say, *whether this effort shall succeed or be defeated*—whether we shall draw the Plough, the Loom, and the Anvil, and all other industries close around each other, for mutual support, or whether we shall scatter far and wide, each following the plough to keep soul and body together, sending to England for the products of her looms and her anvils, as advised by her Majesty's Minister, and by "W. Brown, M. P., of Richmond Hill, near Liverpool."

ON THE CULTURE OF WHEAT—VARIOUS KINDS—TIME AND QUANTITY TO SOW, &c.

WHILE we are aware that every point is important, connected with the cultivation of one of the great staples of the country, we are also aware of the difficulty of suggesting anything really new, and which has not fallen within the range of the observation of experienced practical men, who look closely into all their field operations; and more especially the observation of those who, besides their own experience, have had the curiosity and the pride to make themselves familiar with what has been written on the subject.

Hence it is, that we are perhaps too prone to overlook subjects that fall within the routine of general experience, forgetting that every year brings a crop of young farmers into the field, more and more disposed, as we would fain hope, to save time, by learning at once, or as soon as may be, the results of philosophical investigation, sanctioned by practice.

It was in this last view of the subject of wheat husbandry, having an eye to the near approach of "seed time," that we gave, in our last number, for the benefit more especially of young farmers, a paper on wheat sowing, having applied, in the mean time, for the views, on that and other points, of a gentleman farmer—in the best sense of the word, one who inquires and thinks for himself—who combines close observation with thirty or more years of experience; and possesses, withal, that capacity to draw conclusions which belongs to a mind, that, like his fields, is deeply and well cultivated.

The locality of the writer is the flat tide-water region of the "Eastern shore" of the Chesapeake Bay, in Maryland; one, than which none is more striking or peculiar, or more exclusively dedicated to the culture of wheat and corn: neither is any going through a more general and improving course of amelioration, by modern systems, of liberal and enlightened culture. Still it is no child's play for them to live, as their fathers did before them, with houses and hearts, like their lands everywhere open and accessible, and yet improve their estates in competition with the German emigrant, on the fertile lands of the west, accustomed in his own country to work with his own hands, and to live on *pumpernickel!*

As for the minute practical details, for which our respected correspondent speaks, as it were, apologetically, we can only say, that it is just such plain, practical details that we always like to see in such communications, instead of the long, prefatory, self-depreciating prefaces, with which such communications are too often encumbered, reminding one, when at last you discover how little else there is, of one of those outrageous Mexican gourds—all neck and no body. If we may be allowed here, where there is nothing but the contrast to remind us of the fault, we would take the occasion to suggest to agricultural writers to avoid long preambles, and come at once to the gist of the subject.

The following is a most satisfactory answer to our queries. The signature will commend it to all who know the writer, and the matter to those who do not. ☞We would here suggest to our friends to get in the way of asking, through our pages as writers do, anonymously, or otherwise, in English papers, for information they may desire on any particular subject.

"DEAR SIR:—I avail myself of the first opportunity to answer several interrogatories you have addressed to me on the subject of wheat. I will take them *seriatim*—and, first, with regard to *steeps*—they are not used in this section of county, save only for the prevention of smut; and brining and liming have been found to be effectual. Much has been written and published on this subject, and various plans proposed, on high authority; among the most prominent, that of placing the wheat in soak in strong brine, that will float an egg, for at least one night; the following morning, the wheat to be thrown on the barn floor, and recently slaked lime to be well stirred in, so that each grain may be coated, or impregnated with lime. It has been asserted over very imposing names, that this is not only effectual for the prevention of *smut*, but that the wheat germinates speedily and grows off vigorously. Such has not been my experience with regard to the last effect. The wheat evidently came up tardily—did not look healthy, and, altogether, disappointed my expectations. I had the most convincing proof of the fact; a strong appearance for rain in the evening, and the probability that the seeding would be suspended for a day or two, deterred me from putting the wheat in soak at the usual time: the weather proving more favourable than had been anticipated on the following morning, the seed was simply washed in brine, the lime applied in the usual way, and instantly taken to the field and sowed. There was a manifest superiority in the growth and appearance of the wheat thus treated, over that which had laid in soak for a night. This determined me to return to my old method of simply washing in brine and then immediately applying the lime, and as soon as possible thereafter, committing the seed to the earth. This method is equally effectual for the prevention of smut. By throwing a half bushel of wheat into a tub and then pouring the brine rapidly on, till it rises several inches above the wheat, the smut balls will float on the surface, and all light and inferior grains that are unfit for seed. Again, stir the whole with a stick; this will give the smut balls and light grains a chance to escape from the mass below and float on the surface. Place a basket on an empty barrel and pour gently in—all the trash will be retained in the basket, and the brine will be saved in the barrel below for future use. As soon as the light grains, &c. have floated off, then throw the entire mass of good wheat and brine into another basket, placed as before indicated on a second barrel—the brine will soon pass through, and then the basket is emptied on the floor and the lime stirred through the wheat. No time need be lost, for while the brine is draining off, another half bushel may be placed in the tub and be passing through the process; so that each operation may be going on in rapid succession, and seed enough for the day prepared in a short space of time. Attention to details constitutes one of the main causes of success in rural affairs. I shall therefore make no apology for the minuteness of the preceding.

"Need I add, that a strict account should be kept of the wheat measured dry, for it swells greatly, and if the farmer sows according to the measure of the wheat in the damp state, he will find his crop much too thin.

"I tried Glauber salt in solution, a few years ago, in place of the brine: it was strongly recommended as far preferable, and although I followed the directions given, strictly, it was by no means as successful as that above described. I was informed, however, by an intelligent farmer, that it was entirely satisfactory to him. Yet it is quite certain that we both pursued the same process. A neighbouring farmer has for years pursued the plan of making a good whitewash, strongly impregnated with salt, and immersing his seed therein; he assures me that he has pursued the practice with entire success and satisfaction. The inference fairly deducible is, that lime and salt, properly administered, are certain antidotes for that vile disease in wheat, smut. Would to God the "Hessian" could be as readily overcome. I have been so entirely free from smut for several years that no precaution has been used, and wheat in its natural state has alone been employed for seed: and it may be stated with truth and candour, that this method is preferable, because ever the most successful. How it is that my experience differs so materially from that of others, so eminently entitled to respectful consideration, I am unable to account for. Can it be, that I am surrounded with a *saline atmosphere?* It is proper to add, that the experience of others in this county fully confirms my own. I shall, therefore, always regret the necessity for brining and liming wheat for the prevention of smut—even when the operation is performed in its most mitigated form—but, nevertheless, whenever it may appear in the seed, whether purchased, or raised on my

own premises, I shall never *fail* to administer the remedy, because experience teaches me that it is potential. I have warned farmers of their danger in this respect, and besought them to apply the remedy; but no—they did not care for a little smut—finally, nearly one-half the crop has been smutty. It may be remarked, that some varieties are more liable to this disaster than others: so far forth as my observation has extended the beautiful white wheat from New York, called by General Harmon, of Wheatlands, the improved white flint, seems most liable to this disease. This is the more to be regretted, because it always commands the highest price in the market. I may add, while on this subject, that many years ago I washed some thirty bushels in pure water, and strewed over it powdered gypsum, which was incorporated thoroughly, and, although this wheat had much smut in it, the product was entirely clear.

"Some years ago a preparation was announced (Hauterieve's) as a steep for wheat—it was perfectly limpid and had a peculiar odor. I was induced to try it because it was asserted that neither bird nor fowl would touch the grain that had been steeped in it, and it was said to have many other virtues. Accordingly a barrel of this preparation was procured, and used agreeably to the directions.

"It caused rapid vegetation some days sooner than that which had been brined and limed, and seeded the same day in its immediate vicinity. The wheat made a rapid growth in its early stage, and for several months was so promising that a casual observer would have pronounced the land manured when it was growing, and that adjacent, without manure. This flattering appearance gradually subsided—smut also appeared in it, while that alongside, and treated in the usual way, was entirely clear: finally, at harvest, no difference was perceptible. This preparation, which promised so much, may be set down as valueless.

"To sow filthy seed is a disgrace to a farmer—the cylindrical screen will separate all cockle and darnel and all other seeds of weeds of less size than good wheat. Such great improvements have been made latterly in the wheat fan that filth, for the most part, may be separated; no reasonable excuse can, therefore, be made for suffering the land to be occupied by such pests, to the detriment of the crop. And now, as to the depth of sowing, and the time. I submitted this question to a few of the members of our Board of Agriculture, and it was the concurrent opinion that two inches was deep enough to deposit the seed. You are aware that in this section of country the general practice is to cover the seed with the plough, and, doubtless, much of it never sees the light, and much also is impaired by the effort to emerge. Since the introduction of the treble plough, an implement of great value, this difficulty has been greatly lessened, for it is now in the power of the farmer to deposit his wheat at the proper depth, in all lands free from grass, and what is of immense consequence, the seeding of the crop is greatly expedited. In reply to the inquiry you make as to the tendency of wheat to change its *character*, colour, &c., under the influence of soil, climate, or either—it is very certain that great changes do take place. Some have ceased to grow white wheat, because in a few years it degenerates to red. The purest, whitest wheat procured for seed will produce one crop to look tolerably well: sow this again and it becomes much darker—and yet again, and it is scarcely distinguishable from red.

"Our salt water lands are those which produce the fine white wheat, and none others in this part of the State; and yet a portion of those are unsuited to its production—and why? I have remarked, that in all soils producing the whitest wheat, the substratum is a rich *unctuous yellow clay*, and the seed should always be selected from such soil, to keep it up to the mark; for portions of the same field will be underlaid by clay of a different colour. The strong white pipe clay, so called, produces heavier wheat, but not so white, and hence the necessity, even on the same farm, of selecting the seed, as above indicated. Many farms bordering on salt water, produce abundant crops of heavy wheat, but not white; and this can only be attributed to the sub-soil; for, in all other respects, as regards fertility, locality, &c., they are equally well situated. Perhaps our agricultural chemists may be able to throw light on this subject. I have not been so fortunate, as yet, to get my soil analyzed.

"Change of seed after a few years on the same farm, seems to be indispensable, otherwise, deterioration will be the inevitable result. Formerly, the old Washington wheat was seeded for very many years without depreciation; but at length it gave way, and there is none left in our midst: a saline atmosphere was indispensable to the production of this wheat. White wheats are more liable to rust than red; but they sell for more money, produce superior flour, and, in lands adapted to their growth, grow more bushels per acre, and consequently, are most valuable.

"And now, as to the best time for seeding wheat. In our climate, Talbot county, Maryland, experience has long since convinced me that the month of October is the true and only proper time for sowing wheat; and in this opinion all of our most intelligent and best practical farmers concur. Those who sow Mediterranean do so in September,

and have done it with impunity for some years; but the ravages of the fly are said to be considerable in the present crop, and have been gradually increasing for several years. If a rain falls early in October, succeeded by a cool change, you may begin the work and go ahead with the best possible chance of escaping injury from the fly. I once waited till the 12th of October, to obtain this change, and had every reason to be satisfied with the result. In general, from the 5th to the 25th of the month, may be regarded as the most favourable for committing the seed to the earth; but if a crop can be seeded in ten days, then from the 10th to the 20th may be deemed, in a series of years, as the most likely to be crowned with success. Finally, Mr. Editor, the quantity per acre for seed is a matter of no small consideration, especially in lands capable of producing abundant crops. I have long been convinced that five pecks of wheat, trod out after the old method, were equivalent to six which have passed through a machine, for seed. Many grains of threshed wheat are partially, or entirely cracked—the ends of others are rubbed too hard to be capable of germination, and an adequate allowance should be made therefor. This allowance is not made by many farmers; and some of these injured grains possess, too, a small principle of vitality, and necessarily produce poor, spindling plants, whose product spoils the beauty of the sample of wheat, if, indeed, they should escape passing through the screen, in the process of winnowing. Allow me to strengthen my position by a brief quotation from an English work which you have republished—I mean *Stephen's Book of the Farm*, p. 28 (1490).*

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* NOTE.—*From Skinner's edition of Stephen's Book of the Farm.*—Seed-wheat should be *pickled*, that is, subjected to a preparation in a certain kind of liquor, before it is sown, in order to insure it against the attack of a certain disease in the ensuing summer called *smut*, which renders the crop comparatively worthless. Some farmers affect to laugh at this precaution, as originating in a nonsensical faith in an imaginary specific; but the existence of smut and its baneful effects upon the wheat crop are no imaginary inventions, and when experience has proved, in numberless instances, that the application of a steep has the effect of warding off the evils of smut, the little trouble which pickling imposes may surely be undertaken, rather than the whole crop be put in jeopardy. *Why* pickling *now* should have the effect of preventing the smut at a *future* period is a different question; and it is perhaps because this question has not hitherto been satisfactorily answered, that pickling is thought lightly of by some farmers, rather than because any valid objection can be urged against its practice. Indeed there cannot, for the palpable fact stands obvious to conviction, that one field sown with pickled wheat, and managed in the usual way, will escape the smut, while an adjoining one, managed in exactly a similar manner, but sown with plain wheat, will be almost destroyed with the disease. I have seen this identical case tried by two neighbouring farmers, the Messrs. Fenton, late tenants of Nevay and Eassie, in Forfarshire. It is true that, on some farms, wheat sown in a plain state escapes the disease, as I have heard Mr. Oliver, Lochend, near Edinburgh, state is the case with his farm; and it is also true that pickling does not *entirely* prevent the recurrence of the disease on other farms; but such cases are exceptions to the rule, which is, if wheat is not pickled it *may* be smutted; at least no one can aver beforehand that it *shall not* be so; and while uncertainty exists in the recurrence of a serious disease, the *safer* practice is to bestow the trouble of pickling, the expense being very trifling, rather than incur the risk of disease. It is now a well-ascertained fact that inoculation will not insure immunity from small-pox, yet it will certainly modify the attack when it occurs, and so it is with the case of pickling wheat; and as long as means are used to ward off small-pox, so long also, from analogy, ought wheat to be pickled.

Wheat is pickled in this way. For some days, say two or three weeks, let one of the tubs referred to (in 1229) be placed to receive a quantity of chamber lye, and whenever ammonia is felt to be disengaging itself freely from the lye, it is ready for use. It is better that the effluvium be so strong as to smart the eyes, and water added to dilute the liquor, than that the lye be used fresh. This tub should be removed to the straw-barn, as also the wheat to be pickled, and part of the floor swept *clean*, to be ready for the reception of the wheat. Let two baskets be provided, capable of holding easily about half a bushel of wheat each, having handles raised upright on their rims. Pour the wheat into the baskets from the sacks, and dip each basketful of wheat into the tub of lye as far down as completely to cover the wheat, the upright handles of the baskets preventing the hands of the operator being immersed in the lye. After remaining in the liquor for two or three seconds, lift the basket up to drip the surplus lye again into the tub, and then place it upon two sticks over an empty tub, to drip still more till another basketful is ready to be dripped. Then empty the dripped basket of its wheat on the floor, and as every basketful is emptied, let a person spread, by riddling through a barn wheat-riddle, a little slaked caustic lime upon the wheat. Thus basketful after basketful of the wheat is pickled till it is all emptied on the floor, when the pickled and limed heap is turned over and over again till the whole mass appears uniform. The mixing by turning is most surely managed in this way. Let two men be each provided with a barn shovel, and let one stand on each side of the heap, one with his shovel in the right and the other with his in the left hand; let both make their shovels meet in their edges upon the floor, under one end of the heap of wheat, and each,

For seed, the dimpled end of the grain should be distinctly marked, and the site from which the rootlets issue should be rather prominent, and the end from which the blade springs should be covered with a slight degree of wooliness or hairiness. The protuberances of the rootlets and woolly ends should not have been *rubbed off by any process*, such as sheeling, as the grain is thereby rendered unfit for seed by being deprived of its vitality.

Before I ever saw the above mentioned book I was entirely satisfied with regard to the facts in the case, and have, accordingly, for years, been in the habit of seeding two bushels per acre—and this, too, after the most thorough cleaning—and have never yet seen my wheat too thick—aye, hardly thick enough. Mr. Editor, you know that this matter of thick and thin seeding is a mooted question, and while "*non nostrum tantas componere lites*," I have arrived at the conclusion that thick seeding is best, because it affords "scope and verge" for the ravages of the Hessian fly—unhappily, not often sufficient—as well as for those defective grains, incapable of germination.

I have thus answered, in my humble way, the several questions on which you have invited my views: whether they may be useful to any of the peaceful cultivators of the soil is a question I shall not presume to determine.

I am, very truly, yours, N. GOLDSBOROUGH.

P. S. A couple of bushels of Turk's Island salt will be sufficient for a large crop. The brine may be used again, and again till used up. Many mistakes have been made about this matter—too long in soak—*vide Patent Office Reports—cum multis aliis, vale.*

MARBLE LIME.

We have been shown a portion of lime taken from a kiln recently burned by John H. McCue, Esq., near Fishersville, in this county, from stone which is nearly pure variegated marble, and we feel free to say that it far surpasses anything of the kind we have ever seen. It is so fine and pure that its colour is an intense white—and we have been credibly informed that one bushel is equal to three of the ordinary kind. Mr. McCue has erected a large furnace capable of burning one thousand bushels at a time; and we doubt not that when the railroad is completed, "Augusta Marble Lime" will become a great staple of export from the county.

Augusta is rich in minerals, and it is to be hoped that they will shortly be more fully developed.

The above is from the Virginia Messenger, published at Staunton.

Until her mountains shall have been penetrated by railroads and canals no man can begin to imagine the resources that lie embedded in the bowels of that State, for giving employment and sustenance to the millions of active, industrious, and prosperous people, by whom it would have been inhabited before now if, when we threw off nominally our political dependence on Mother England, she had not retained us practically in *colonial bondage.* True, we extorted from her verbal acknowledgment of our right to make our own laws; but we were so elated at that, that we remained to such a degree dependent

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on lifting his shovelful, turn it over behind him, and thus proceed, shovelful after shovelful, to the other end of the heap. Let them return in a similar manner in the opposite direction, and aye till the heap of wheat is completely mixed with the lime and lye. The pickled wheat is then sacked up and carried to the field in carts. Other substances beside chamber lye are used for pickling wheat, such as brine of salt, sufficiently strong to float an egg; solution of blue vitriol—all good enough, I dare say, but when so simple and efficient and easily obtained an article as lye can be had, it appears to me unnecessary to employ anything else. It is a powerful ingredient, destroying vegetable life in the course of a few hours, and it is perhaps to this property that is to be ascribed its efficacy as a protection against the attack of that vegetable enemy of the wheat-crop—the smut. The wheat pickled with it should therefore be used immediately after the process; and as danger may be apprehended to pickled wheat being kept over night, the quantity pickled should be sown at once, and no more should be pickled at one time than can immediately be sown. The use of the quicklime seems to be to dry the lye quickly, so that the grains may be easily separated from one another in the act of sowing; but there may some chemical change arise between them in the circumstances, which may be serviceable to the purpose for which both are employed. Can it be that the lime fixes the ammonia of the lye, and preserves it for use until wanted by the plant or seed?

☞ Cost of English copy of this work from Booksellers when imported, $25; sold by J. S. Skinner, from his stereotype plates, with his notes, for $5.

on her still for manufacturing our raw materials, that the Edinburgh Review has but lately avowed that "*the United States of America are but colonies of England in a matured state!*"

Yes—if we would once unite and say, we will compel those who manufacture for us, the articles of which we have the raw materials, or the capacity to produce them, to come and reside here and manufacture them where we have the steam and the water power—the coal, the iron, the cotton, and the wool—the leather and the timber—the lime and the materials for glass ware, and earthen ware, and iron ware, and wooden ware; if we would once unite and proclaim our determination to do that, as the settled and irrevocable policy *of the people* and the government—Virginia, above all States in the Union, would soon teem with millions of people engaged in other pursuits; demanding the produce of her fields and gardens, and orchards and dairies, and forests and mines, and quarries of coal and iron, and lime and marble, and granite and timber. Having the advantage in the start, she ought to have been, and under such a policy would have been, this day, the most populous, and powerful, and prosperous State in the Union. She would be in no want of "Agricultural Conventions" at Richmond, that come and go every ten or fifteen years, like the ghosts in Hamlet—"honest" ghosts, intending well, but realizing nothing, for want of that *substantial, all-pervading, permanent* guarantee for a prosperous agriculture, which is *only* to be found in the *presence of other prosperous industries.* Insure that, and you insure *all the rest.* Then will come schools and education—cultivation of the mind and cultivation of the land. This is what Virginia, above all States in the Union, demands for her advancement in everything, and this is what, above all States, she has the means and the power to realize; yet above all States she has stood most in the way of this glorious consummation, so devoutly to be wished. If her statesmen would but unite in carrying out this policy, she would soon supply the capital; and the enterprise for direct steam communication from the Chesapeake to the shores of Europe, and millions of hardy operatives, accustomed to labour and skilled in every trade, would come to swarm like hives of industrious bees about her mountain mines and water powers, and along her mountain valleys. The first settlers would send "home" to those they left behind, certificates of the extraordinary healthiness of her climate, the fertility of her soil, the richness of her mines and her forests, and the exhaustless extent of her water power. In place of all which, what is now her position? With all her incalculable and glorious advantages, almost as much cut off from a knowledge of them by the world as if they were in the moon—instead of being, as they are, within forty-eight hours of the ocean, and lying in the most healthful and delicious climate in the world—for no part of Italy itself can excel, in this respect, the high lands of Virginia, North and South Carolina, Georgia, Kentucky, Tennessee, and Alabama.

And why should not the oppressed and downtrodden European operatives, whose labour now supplies us annually with one hundred millions of foreign manufactures, of iron and cloth, and silk and wine, and cutlery and haberdashery, &c., be living in that region, enjoying liberty, abundance, and health, supplying and supplied, by the American Farmer and the Planter on the spot? It was, to speak our own conviction of the soundness of such a policy, and how *indispensable to the welfare* of agriculture is its establishment—it was, we say, for this chiefly, that we undertook, at this time of life, and in the face of so much opposition, to establish "THE PLOUGH, THE LOOM, AND THE ANVIL." The very first twenty-four pages of this journal were appropriated to showing "*the reciprocal relations of Agriculture, and the other branches of American domestic industry.*" In fact it was in this way only that we could hope to be instrumental in the permanent improvement

of agriculture. It was impossible for any language to be more explicit, and yet the Editor of "The Democrat," published at Abingdon, Virginia, in an otherwise very kind and respectful notice, for which we are unfeignedly grateful, seems to think that the *political economy* of agriculture has been, as it were, surreptitiously introduced into this journal! The fact is we have nothing to do with politics in any other way or in any other light. We care not a fig for one "party" more than another, except as they act on this point, in a manner that, in our conscience and according to the lights of our best judgment, we believe to be absolutely indispensable to a permanent, steady, and reliable market for our agricultural produce, which, being secured, all is secured that human wisdom and industry can do—but which, not being secured, agriculture can never attain that degree of improvement and prosperity, for which nature has provided all the essential materials.

With a force of truth in every word, as pure as double refined gold, Mr. Carey says—"The nearer the place of conversion (Manufacture) can be brought to the place of production, the less will be the necessity for the transportation, the more steady will be the demand for labour throughout the year, the larger will be the quantity of labour that may be given to the work of production, the better will the labourer be paid and clothed, and the more rapid will be the accumulation of wealth in the form of machinery to be used in the further increase of production."

The French have a saying—*L'homme propose, mais Dieu dispose.* Man proposes, but God disposes. God has so disposed and arranged the elements of prosperous growth in the States we have mentioned, and especially for the people of Virginia, that they ought to be pre-eminent in all that constitutes greatness—but behold her importing, every year, millions, for which she has materials in superabundance *on the spot*, because, for the moment, she can buy cheaper articles made abroad, by people who live as described already in *this number*, at pages 69, 70, 71, 72, 73, to which we entreat our friend the editor of "The Democrat," to turn back, and then say whether it is best for the American Farmer and Planter to have his cloth and iron made by people who live thus, three thousand miles away, or by persons at the loom and the anvil in our own country, near to our own ploughs, where they would not only be *certain*, but *able customers* of the Farmer and the Planter—and yet it is for maintaining this doctrine that many are writing, as for example:—

POST OFFICE, *County, Ohio.*

"*Dear Sir*—I am desired to instruct you to discontinue 'the Plough, the Loom, and the Anvil,' to the following (six) persons. Now this I admit is a *shame*—some plead poverty and some *locofocoism.* Enclosed I hand you fourteen dollars, for which you will send your next volume to the following named (seven) persons."

Now to the man who pleads poverty, we would unfeignedly rejoice if we could afford it, to send it gratis, but it staggers our faith to believe, that any man can be made poorer by giving three bushels of wheat for three times three hundred pages of valuable matter, relating to the economy or practice of his profession. And as for the locofocoism, why don't they refute, instead of refusing to read? or are they afraid of being persuaded that it is better to study the interests of one's country, than the interests of party—be it what party it may? Don't we let our readers have both sides? Look at Mr. Williams' criticism on our doctrine from the Ohio Cultivator, in this number. Our correspondent above inquires, if we will be at the State Fair in Cincinnati? We can only say *we'll* "*try.*"

COZZENS' HOTEL, *West Point*, July 10th, 1850.

HEAR BOTH SIDES.

In conformity with our uniform practice of letting our reader see both sides of the question, we give the annexed letter from the *Ohio Cultivator*, in reference to the doctrine we have undertaken to teach the farmer, to wit: that if he would grow rich and independent *he must make a market on the land for the products of the land.*

Our critic informs his readers that "improvements in machinery have come to our rescue," but he *does not* inform them that we should have had *no* machinery *but for protection*, fluctuating and inadequate as it has been. If he doubt the fact, let him look to the *unprotected* Canadian, and inquire where is *his* improved machinery, and the answer will be "nowhere!" The Canadian has none, and therefore it is that he is begging for permission to sell his wool and his wheat in our *protected* market, when he has open to him "the great grain market of the world," to obtain which we have closed our mines, and furnaces, and mills, and driven out our miners and furnacemen to go west, there to raise food for themselves.

The domestic market *is* large, but it is decreasing, because such men as the writer of this letter prefer to compel "the poor Spitalsfield weaver," and the poor "female operative" to remain at home to "starve," although willing to support themselves by "honest industry," instead of permitting them to come here and become large and well fed customers to "the Ohio farmer." If our critic desire evidence that such is the result of the system which he is disposed to regard as free trade—but which consists in keeping the consumer and the producer at a distance from each other—he may find it in the following facts:—

Under the protective tariff of 1828 immigration to our country *trebled.*

Under the compromise tariff it became stationary.

Under the protective tariff of 1842 it again *trebled.*

From 1847 to 1849 it grew slowly, comparatively speaking, and it is now in like manner diminishing, as will be seen by the following statement of the arrivals of aliens at some of the principal ports of North America:—

		1849.	1850.
New York,	February	8,819	3,206
" "	March	9,530	5,567
" "	April	19,924	14,627
" "	May	37,417	42,846
" "	June	28,975	11,734
Philadelphia,	six months	7,419	4,619
		112,084	82,599

At Boston the falling off has been about one-sixth.

The average reduction has been about twenty-five per cent., and thus has immigration gone back to where it stood in the year 1846–7, when it would have *trebled* had the tariff of 1842 been permitted to remain. We should be glad if our friend would reflect how many "poor Spitalsfield weavers," and poorer "female operatives" would have been enabled to make this their home had we not produced a policy that has closed, or is closing all the mills and furnaces of the Union; and how much the Ohio farmer has gained by *shutting out* the hundreds of thousands of miners, and furnacemen, and operatives of all kinds that would have come here to eat his food, had they been permitted to do so. *Common sense* teaches that the man who comes where food is cheap is a large customer to the farmer. *Uncommon sense* teaches that he who remains

where food is rendered dear by the necessity for giving to wagoners, boatmen, commission merchants, sailors, and traders of all kinds, two-thirds of what they transport for the work of transporting it, is a better customer. Unhappily, however, for the *uncommon sense men*, the Spitalsfield weaver obtains little food for his labour, and the farmer little of his cloth for his food. We should be glad if our critic would calculate the quantity of American food that would be consumed by an operative in Steubenville, when engaged in converting wool into cloth for "the Ohio farmer," and then calculate how much would be consumed by one similarly engaged in Manchester, and see if the *one man here* would not make a larger market than *one hundred men there*. Let him do that, and then let him ascertain if there is any reason to believe that "the great grain market of the world" will furnish this year a market for a single bushel of Ohio wheat or corn, or a single pound of wool; and if there is not, on the contrary, an *absolute certainty* that if the *farmer* did not enjoy protection, there would be large imports of cheap grain and cheap wool into the Union. It is really time that gentlemen who undertake to instruct the world on this important fact should relinquish the practice of retailing the teachings of English political economists, and study for themselves the facts occurring round them.

LETTER FROM SAMUEL WILLIAMS.

TARIFF AND FREE TRADE DOCTRINES.

(From the Ohio Cultivator.)

WATERLOO, N. Y., *April*, 23, 1850.

M. B. BATEMAN, Esq.—I see that the masterly editor of "The Plough, Loom, and Anvil," advocates in your paper the importance of a prohibitory tariff of duties on railroad iron, &c., as the true means of giving to the Ohio farmers a better home market for their productions.

The day was when I could endorse every word that this veteran writer has said in the premises; but custom and experience has long since disabused me as to the true meaning of that very equivocal and often misconstrued word, *protection*. The Ohio farmer "needs not that any man teach him;" his daily life from youth up proves the fact, that well directed, intelligent industry, economy, and self-reliance, is the only true and legitimate God given protection to his industry. All the experience of our cotton manufacturers proves that each increase of a tariff for protection, from 1815 to 1833, added only to the increase of useless or extravagant expenditure, inordinate outlay, bad, reckless economy, and consequent bankruptcy and ruin. When the last reiterated demand for another increase of tariff was made on Congress, even Mr. Clay ceased from his cotton bagging protection speeches, and Mr. Calhoun, who had generously voted the first tax, began now to breathe nullification! But industry, economy, cheaper living, and improvements in machinery came at length to the rescue; and our manufacturers have now become exporters to the amount of millions of dollars! So far from our agricultural products being depressed for the want of a sufficient home market, the history of the civilized world cannot exhibit the example of a home trade so rapidly extending and increasing as ours! As to manufacturers: did any country under the sun ever increase faster in manufacturing industry than these United States? and, strange as it may seem, those arts which have received no bounty in the shape of protective tariffs have flourished most! Our ship builders have made ships of war and steam frigates for the Czar of Russia, and the Grand Turk. Our engineers construct their railroads, and our workshops supply them with steam engines, &c. Yet these arts have grown up without other protection than that which is the birthright of every Ohio farmer, industry, economy, and self-reliance.

'Tis true that our import of the more luxurious fabrics from Europe is great, and, if you please, alarmingly increasing; but it is in such articles as do not come in direct competition with our own established trades and manufactures. This great increase of imported luxuries can only be referred to, and is only chargeable upon the astonishing pecuniary prosperity, and consequent showy civilization of young America! But is not this all right in the great scale of universal philanthropy? *Who grudges the poor Spitalsfield silk weaver that weekly pittance which feeds his little ones;* or who would starve, by turning from honest industry, the millions of European female operatives, who live by their own handiwork; certainly not an Ohio farmer, a sovereign of the soil, now in the full fruition of every blessing, moral, physical, and spiritual.

ON THE CAPABILITIES OF MONTGOMERY COUNTY—MARYLAND.

SUMMIT LEVEL, 12*th March*, 1850.

MR. PRESIDENT:—Amongst the numerous essays written on the agricultural productions of our country, I have not observed a full statistical statement of our natural resources. The idea has occurred to me to embody a few of the many resources and advantages possessed by our county, hoping to see from competent hands at some future day a full and correct detail. With this apology for my limited means of accurate information, I have detailed some facts, rather imperfectly obtained, of the resources and advantages we possess. Believing that a brighter day is about to dawn on our agricultural and manufacturing interests, which I consider inseparable, the points I shall refer to are our geographical, agricultural, and water power, with some miscellaneous remarks.

First, by our geographical position, we are the nearest of the counties, west of Washington city, to tide water and the District of Columbia. The elevated ranges or spurs of the Parr's ridge extending through our county, having an elevation of about 700 feet down to lower levels, gives us that fine diversity of hill and valley, pure water, noble streams, healthy air, and beautiful ladies. The facilities of transportation by canal, railroads, and wagons, to the District and Baltimore markets, give superior advantages to our agriculture, whilst the water power for manufacturing purposes, if equalled, is not surpassed by any other county of the State. The lower counties of Maryland afford but small water power compared with our own, the dividing ridges between the principal streams being too low to give rise to large streams with sufficient fall for manufacturing purposes, especially during the long dry months of summer.

Secondly, our agriculture, through the exhausting cultivation of the soil, has given an unfavourable appearance to agricultural interests, which the successful improvements of our enterprising farmers are about to dispel, and show the undeveloped resources we possess, and where but one barrel of corn was raised to the acre, sixteen have, by improved lands and cultivation, succeeded, leaving the inference clear that the average yield of grain crops, on improved lands, would be at least twenty or more bushels to the acre. Therefore, assuming twenty bushels as the least average yield, I proceed to the following calculations. Our county is supposed to contain between 500 and 600 square miles: taking the lowest number, 500, and that each square mile contains 640 acres, would give 320,000 acres. Allowing one-third, or 106,666 to be wood and waste lands, and that the other third of 106,666 acres be appropriated to pasture, hay, and root crops, the remaining third of 106,666 acres, at twenty bushels to the acre, would amount to 2,133,320 bushels. Allowing one-third for stock, would leave 1,422,214 bushels for breadstuff; and supposing each person to consume fourteen bushels annually, would feed a population of more than 100,000. Estimating the present population at 10,000, would give twenty inhabitants to the square mile. Supposing the improved condition of the soil described, it is thus shown that in the place of the present population, 100,000, or 200 inhabitants to the square mile, might be as well or better supported. I believe the above estimates to be far below the capabilities of the county when properly developed by improved cultivation.

Whether the resources of the county will ever be made available, depends on the interest its population shall take in their development. My object is to show that the agricultural resources exist, as well as the superabundant water power I am about to describe.

[Here the writer gives an estimate of the number of feet fall, but not the volume, of the various streams in the county, "from the survey made in the summer of 1838, for the then contemplated cross-cut canal from the mouth of Seneca to Baltimore." In this estimate he says, "I have commenced the fall of water at the points where the streams become available for manufacturing purposes, the greatest elevations of available water power being about 450 feet above tide." We omit, for want of space, these local details, as respects each particular stream, the following recapitulation being sufficient for the general, if not for the local reader:—]

Seneca and its tributaries,	850
Patuxent and its tributaries in this county,	450
Rock creek and its tributaries,	500
North-west branch in this county,	100
Muddy branch,	200
Watts' branch,	150
Cabin John,	150
Small streams between Cabin John and District,	100
Bennet's creek, Little Monocacy, and smaller streams running to Monocacy and Potomac,	300
The Potomac from its entrance in the county to its termination at tide,	150
	2950

Thus giving a general aggregate of 2950 feet of available water power for the county. Allowing twenty feet fall for each, would give sites for 147 mills, factories, or any purpose water power may be required for.* As my object is to show that there exists an excess of water power in the county beyond all probable demand, I have given the fall of the tributaries far below their available power. For instance, the Wheatstone, uniting with the Seneca at Middlebrook, has an actual fall, by correct measurement, of over 100 feet, though I have estimated it at only half that amount. So that in the place of the estimate above, I believe 4000 feet of available water power to be nearer correct. General purposes being my object, I have shown that whenever capitalists find it a profitable investment of money, the manufacturing facilities exist to an indefinite amount. The great falls of Potomac, Rock creek, and the North-west branch, afford the only means of giving a natural flow of water to Washington. Should the demand for such supplies of water as the Croton aqueduct affords to New York, be required for Washington, these sources will have to be relied upon, and could be conveyed to Washington by less than half the distance of the Croton aqueduct. In such an event, Rock creek will probably present superior advantages. The fall and volume of water being much less in the North-west branch than Rock creek, though nearest to Washington. The Potomac at the great falls has less elevation—difficult river banks, and the canal already occupying its margin. From the sources of the east and west forks of Rock creek to their junction, they drain an area of about thirty square miles. A reservoir constructed where they unite, connected with an aqueduct at the base, would be about 200 feet above tide at Washington, and about fifteen miles distant.

It is unnecessary to detail the application of the water power of the county to other purposes; such as irrigation, &c. A superficial glance is sufficient to show that we possess water advantages of no ordinary kind. The difficulty is not in the lack of matter, but in condensing it.

* With power to propel how many spindles or pairs of stones? in each case, or in the aggregate?—EDIT. P. L. AND A.

I shall close my communication with a few miscellaneous remarks. With such resources as I have described, well may we feel the importance of our position. Having every natural advantage, it remains to be seen whether the enterprise of our citizens is adequate to the improvement so nobly commenced by the few who are leading the van of successful cultivation. It is said that there are individuals raised and living within hearing of Niagara, that have never seen this wonder of the Western hemisphere, which has caused others to cross the Atlantic to behold it; and doubtless there are individuals of other lands, with the map of our country before them, resting their eyes on our location with more interest than is felt by many of our own citizens. The central position of Washington, and the vast improvements completed and contemplated, mark its present and future greatness as it steadily progresses in uninterrupted prosperity; our proximity giving us all the advantages of markets, trade, and literary improvement.

It must be admitted, that the parts of the county bordering on the canal district, Patuxent, and near Monocacy, possess greater facilities for procuring lime than the more central parts; and points out the necessity of using guano, bone-dust, and other fertilizers more portable than lime where transportation is difficult. Fortunately, the light red clay soils of the interior are admirably adapted to the light fertilizers mentioned.

One of the difficulties to the improvement of our soil is found in the unwillingness of our young men to engage in a life of patient labour; and until labour and the mechanic arts are appreciated by the undiscerning, it will require a stern moral firmness to rise above vulgar prejudice. Hence, our young men seize with avidity the least inducement that promises some temporary profit or honour, without regard to their future happiness. That the material exists in our own population, is manifest from the improvement made wherever patient industry and judgment are applied to renovate the soil. The flower of our young men, leaving their homes of plenty to die in a distant clime, is a sad commentary on their attachment to their native soil. That they possess energy and enterprise capable of great results is evident. Our country felt a glow of enthusiasm at the recital of the hardships and bravery shown by our hitherto obscure young men led by the veterans Scott and Taylor, storming batteries, and taking the last and greatest city of Mexico: could the same desire to cultivate the soil be infused, we might expect and realize a rich and lasting benefit, and no longer behold the desertion of firesides to go on distant and doubtful expeditions.* Whether pride, false shame,

* It is not want of industry, nor want of knowledge, that retards the growth of population and improvement in Montgomery County, in a manner corresponding with her natural advantages of health, improveable soil, and water power. The people of that county are not behind any other community in the Union, for knowing *how* to make—what they need is a remunerating market near at hand, *whereat to sell!* Their water power will never avail them, while they give themselves up to *party* politics, instead of *the true politics of the plough*; while they are content to send to England for cloth and iron, and to France for silks and wines, instead of compelling (as far as their power goes) Congress to enact such a tariff as shall force the half-starved European labourers engaged in making cloth and iron and silks and wines, to come and make them all here—at a higher cost, if you will, in the *first instance*, to the Planters and the Farmer, of the cloth and the iron and the silk and the wine; but that higher cost would be tenfold compensated for, by transferring and converting these half-starved millions in Europe, to be here, in our own country, well paid, willing and profuse consumers of the produce of American ploughs. When, in addition to this, the Farmers of Montgomery County, uniting with the Farmers and Planters of all other counties, shall have compelled their law makers to appropriate money for schools to teach the art of *production*, as well as the *great popular art of shedding blood*, then will population thicken, for then they will have people, near at hand, to demand potatoes and beef and mutton and cabbage, which being fed upon the land, return upon the land, the refuse of its products; instead of relying as now, on crops that are to be sold and consumed abroad—crops that return little to the land, and compel those who notice them to go abroad in search of customers they know not where, and for foreign manures.

an unwillingness to labour, dissipation, or extravagance, or all united, has caused the present sterility of our soil, I shall not undertake to determine; but I think, with the Honourable Mr. Whittlesey, in his late agricultural address, that in the place of mahogany sideboards, china, and plate, something more useful was needed; or that the money realized from the sale of tobacco, that exhausted the soil, should have been applied to articles of necessity, and not of luxury.

JOHN T. DESELLUM.

Mr. A. B. DAVIS,

President of the M. C. Agricultural Society.

THE MARYLAND AGRICULTURAL COMMITTEE—ITS ACTION AND ITS DUTIES.

THE COMMITTEE ON AGRICULTURE IN THE MARYLAND LEGISLATURE, to whom was referred the memorial on the subject of a law to prevent *the destruction of sheep* by dogs, consisted of Messrs. WEEMS, BRAVARD, BOWIE, TILGHMAN, LLOYD, KENT, and SMITH of Washington: all, all honourable men; but as *Legislators*—vigilant to see what could be done for the *agriculture of the State*, this deponent saith not. A committee expressly appointed to investigate and guard a particular branch of industry, and to see what is necessary for its development to the utmost perfection to which we have the resources to carry it, ought not, in our judgment, to wait for external suggestions of measures for its benefit. To make such suggestions, especially as they relate to agriculture, is everybody's business and nobody's—and it needs no Solomon to tell, what always happens in such cases. It is to *inquire* into the condition of such branches of industry, and to see how they may be improved—that standing committees are appointed at the commencement of each session; and it is their duty, not to sit there waiting, drawing their *per diem* and sucking their thumbs, until prompted and pricked on by special instances to their duty. Their care and their pride should be, like that of a grand jury, "diligently to inquire and a true presentment make," of the state and prospects, the grievances and the wants of the class whose interests they have had the high honour of having committed to their charge; and when agriculturists shall have come, if ever, to be *appropriately educated*, and to contract, as in that case they would, an enlightened preference for such investigations and studies as throw light upon *their own pursuit*, then will they learn to "act in a body" at the election! Then will a huckstering party spirit for the sake of power and the spoils, give place to an enlarged public spirit, and then will Agricultural Committees be taught, that if other classes need the attention of legislators, whose thoughts and whose acts they now engross, so does that great class, the cultivators of the soil, on whose labour these others prey and live, as parasitical fungi on more useful bodies. Then, when appropriate education shall have been established at the public expense for the plough, as it is now secured for the sword, will the useful industry of the country be enlightened and disciplined, as General Jessup said he could, in ninety days, discipline the militia of the

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If, in a word, they will read and practice upon the *doctrine we are preaching*, it will do more to enrich their land and thicken their population, than all the essays we could print or they could read, from now till doomsday. Or do they need to read again, the lessons taught them thirty years ago theoretically and practically by Thomas Moore and Roger Brooke, on deep and subsoil ploughing? If they think *that* would do them any good—make their poor land rich, and their country populous, we could take an old volume of the American Farmer, some twenty-five or thirty years old, and re-preach to them again, sermons we preached then, all about the use and value of bones, lime, guano, irrigation, plaster, &c. But instead of that, or besides that, we take it what they want is (as it is admitted they have the *buenos ayres* and the water power) the policy that shall draw, nay, that shall, by the most universal of all forces, self-interest, compel consumers to come within their borders and use their water power and enjoy their salubrious climate. That is what they want, and what the whole country wants. But for saying so, and telling them the plain truth, we who have been labouring day in and day out,for more than thirty years, to advance their interests, we are intermeddling too much in party politics forsooth! The very thought of which, *in the usual acceptation of the term*, we hold in utter contempt. For ourselves, we shall do and say what we believe to be *best for the cultivators of the soil*, and for the rest—trust to Providence. Men may withdraw their support, and ignorance, that dare not argue, may refuse to read; we may even be thrown at last upon the Parish, but we shall make a hard fight, nor call upon Hercules until all acknowledge we have first *put our own shoulder to the wheel!—Edit. P. L. & A.*

ROSWELL HOUSE, *Paterson, N. J.*, June 30, 1850.

United States under the êleves of our military schools; and then will the world dispense with armies and navies, emblematic relics of barbarous times, and too often instruments of rapacity and oppression. In this case, however, a most respectable committee, headed by the president of the society, waited on the committee and urged the adoption of some measure to remove the great and acknowledged impediment to the extension of a branch of husbandry, which but for that impediment would be one of the most fruitful sources of national income. A branch even yet destined to be of incalculable importance.

We had, it seems, been erroneously informed that this agricultural committee made no report whatever on the anti-sheep-killing dog memorial, whereas, as we since learn, it was not quite so bad as that, for they reported, as we are now told, that it was *inexpedient* to grant the prayer of the memorialists, or to that effect. We have in vain endeavoured to get the exact terms of the report; but be it what it may, to have reported at all, warrants the presumption that the subject was matter of deliberation; and what we and the agriculturists of the State may well be curious to know, is the train of laborious investigation which conducted them to the conclusion that this great and acknowledged evil, under which the State sustains an annual loss of some hundred thousand dollars, is *without a remedy!* Will some one give us the arguments that swayed the committee? Which had most weight—the desire to serve and conciliate the owners of land, or the owners of dogs? Was it that they knew that those who follow the plough will always follow the bell-wether of their *party;* while those who are followed by dogs are a floating population, ready to vote against any one who would restrict them in keeping as many curs as they please? Ah! but a better time is coming. We are going to have "the profession act in a body *before* the next election!" So has it been formally "resolved!"

Will the Committee of Agriculture in Virginia, or that of Maryland, who deemed it inexpedient to recommend any legislative action to restrain the ravages of sheep-killing dogs (many of these dogs belonging to sheep-stealers, black and white), will they tell us how it is, that in the State of New York, where land is generally so much higher in price, they should raise more sheep, clip more wool, build three times as many woollen factories, and manufacture ten times as much woollen cloth as all Virginia, North Carolina, South Carolina, Georgia, Florida, Alabama, Mississippi, Louisiana, Tennessee and Kentucky, united? Ask the landholders of these States, and nine out of ten will tell you he would increase his flocks, were it not for the *certainty of having them destroyed by dogs!* In place of the less than five millions of sheep now kept in these States, there is *waste* land enough, well adapted for sheep pasture, to keep twenty millions. Heavily as the committee tasked itself to see how they could develope and improve the agricultural capabilities of Maryland, we should think this problem was well worthy, as the diplomatists say, of their "most profound consideration!"

Moreover, a most respectable committee of the State Agricultural Society had asked emphatically—"Can it be possible, that in a country where equal rights are guaranteed to all, that a large and highly respectable class of citizens shall be subjected to heavy losses, merely for the gratification of a brother to unrestrained propensity [to keep superfluous dogs] not essential either to personal comfort, or productive of any real benefit?"

The Editor of the Pittsfield (Mass.) Culturist enters, in his last paper, into a calculation, which convinces him that wool growing, even in that State, would be more profitable than raising wheat, at twenty bushels to the acre, or making cheese at 300 pounds to the cow. We wonder what he would say on a calculation of ten bushels of wheat to the acre, and the equivalent of 150 pounds of cheese to the cow, which exceed the average of these productions in Maryland and Virginia? He puts the cost of wheat, however, at five dollars the acre. We should be glad to have a report from "the Largest Wheat-grower in Delaware," or from the Agricultural Society of Talbot county, as to what is supposed there to be the fair *cost per acre*, in the manufacture of wheat, placed in the hands of the Baltimore miller; for after all, it is as much a manufacture (with the land for the machine) as is a ton of iron, or a yard of cloth. Let us have, too, for curiosity and practical information, the *items* of the calculation; for surely we have a right to presume that such calculations *are* minutely and carefully made by every farmer, whose labour and capital are embarked in this pursuit, or ☞ is it that, the want of such calculations lead them, just as much as it would do merchants, to become bankrupt and sell out before they know what hurts them? ☜

We have a letter before us from a large wool dealer of much experience, in Baltimore, who says: "As I remarked, before we can expect Maryland to be much of a wool growing State, we must be protected by law, against the ravages of so many sheep-killing dogs. I am informed that several farmers have given up keeping sheep for that very reason."

Now, nobody need tell us, for right well do we know, that strictures like these, upon the conduct and duties of public men, neither get subscribers nor make friends; though they are in nowise incompatible with personal respect, nor so designed in this case; and as for the *party* to which these gentlemen belong, we despise the thought of any such consideration when the welfare of a great interest is involved. We neither know nor care who of them belong to one party or the other. In such cases, legislators should belong to no party. For ourselves, we were reared in the democratic-republican school —we belong to it still, *according to our understanding* of its true creed; but for men and politicians, we are determined to go for those, irrespective of party *names*, who are for taking care of *the industrial pursuits of our country;* and especially of its *agriculture;* which is blended and bound up with all other industries: for in fact we cordially believe in the truth of Governor Hammond's declaration, that "if, guided by the light of history, we look back over the long track of time, we shall find that no nation, devoted exclusively to one pursuit, has been prosperous or powerful for any extended period."

In this, as in many other cases, were we, as we have said before, to consult our interests, depending, as we are, exclusively for bread on the patronage of this journal, we might paint everything *couleur de rose*—flatter when we could and lay dark when we could not; but, as we have said before, ☞ when a man takes the bounty, *ought he not to be ready to fight?*

CROPS OF INDIAN CORN TWENTY-SEVEN YEARS AGO.

Authentic evidence was exhibited, in 1823, of the following products to the Washington county (Pa.) Agricultural Society:—

	Bushels per acre.
Joseph Evans	136
John Wolf	127½
Samuel Anderson	123—12 quarts.
Isaac Vanerokens	120
Isaac Buckingham	118—1 quart.
James Clakey	113
Jesse Cooper	108
De Gross Jennings	120

The above is a true transcript.

JOHN H. EWING, *Sec'y.*

None of the competitors under 100 bushels seem to have thought it reputable to have their names on the list — *hence*, What is most needed for the people of Washington county? Information how to make corn, or a sure market at home for the sale of it?— EDIT. P. L. AND A.

SUGAR.—*New Process in the Manufacture of.*—The following, from a late number of the *Mark-Lane Express*, may have interest for some of our Louisiana friends. Let us, by the way, inquire why it is that we meet with so little encouragement in that quarter? Is it that we have demonstrated that now they give five bales of cotton in exchange for one, whereas they ought to give but three, if they would force the loom to come to the cotton, instead of sending their cotton to the looms at Manchester?

MARK-LANE EXPRESS, LONDON, 10*th June*, 1850.

SUGAR.—Several samples of sugar, of a very superior quality as respects granular texture and brightness of colour, have recently attracted considerable attention in the Bristol sugar market, which has led to much inquiry as to the process of manufacture among the merchants and proprietors of West India estates. It appears, from inquiries we have made, that, by a combination of several patents—among others, the cleansing and drying of sugar by centrifugal force—sugar which formerly took three or four weeks to refine, is now done in as many minutes. Sugars heretofore unsaleable in the English market are, by the new process, converted, as if by magic, into an article realizing 36*s.*, $8 64 per cwt. The machine by which the process is carried on is very cheap, portable, and easily worked, and the raw produce shipped in a state which prevents the waste of some 12 to 15 per cent. in the shape of leakage from molasses. Next to the discovery of the vacuum pan, the improvement of Messrs. Fingal and Son, of Bristol, ranks first in the scale of importance; and they have happily succeeded in combining the interests of various patents held by Messrs. Seyrig, Hardman, Rotch, and others.

ON THE MODE OF USING GUANO—SOME REMARKS WORTHY OF ATTENTION.

ALTHOUGH we, ourselves, called attention to the value of guano, and gave the analysis of its constituent elements, with directions for the use of it as practised in Peru; and distributed two barrels of the substance in Maryland, 25 years ago, long before it had been tried in England—yet that is the country, at this day, into which the largest quantities have been imported, and where its application to the greatest variety of crops is best understood. We observe, indeed, that seventy-five thousand tons were imported into England in 1849; and these, according to the *London Agricutural Gazette*, have been *done up* into 200,000 tons! In London alone, there are ten houses known to be engaged in this fraudulent manufacture, who are charged with selling $300,000 of *fraud* annually in the name of Peruvian guano. Before the London Farmers' Club, there was, very lately, a discussion "upon high farming, showing how and to what extent, capital can be applied to a given quantity of land, to ensure the greatest amount of profit."

The whole debate is highly interesting, and if we could insert it, every discerning practical farmer might esteem it alone, as worth, if he got nothing else, the three bushels of wheat he gives for a year's subscription to this journal.

From among much other valuable matter suggested, in the course of the discussion refered to, we pick out the following. We should be glad to know whether the experience here given, as to the quantity proper to be applied to grain, and the loss which ensues when that quantity is increased as there stated, corresponds with experience in our country.

The speaker was referring to the general subject of the application of capital, with a view to profit, and said—

"The main features to be attended to are, the producing a large amount of green crops for consumption by cattle and sheep, to make such application of inorganic substances to the soil as may be necessary to insure success—in fact, by the addition of lime, chalk, clay, silica, &c. as may be necessary for the general amelioration of the soil; to apply the manure produced upon the farm with the utmost economy and care, keeping in mind always that two light dressings will at different periods produce a greater return than one heavy one for all grain crops, whilst to green crops it will be necessary to apply manure more bountifully, as no damage will ensue by producing them as fine, and at the same time, abundantly in quantity as possibly may be effected; and as regards the application of guano, it will be found most advantageous to apply it to the production of root and other green crops in preference to grain crops, reserving the farm-yard manure as much as possible for the latter. And it may be worth while here to observe that by a series of experiments communicated to me by a most intelligent cultivator, as well as derived from other sources, it has been found that more than two cwt. of Peruvian guano applied to each statute acre of wheat or barley did not repay the cost of the application, as it was found, in numerous experiments, that as the quantity became increased, the result diminished the quantity of grain, although it would have been considered otherwise, as the straw was materially increased, and by increasing the quantity to four cwt. per acre, no increase whatever in the grain from that where no application of it took place. With grass it was otherwise, and with root crops also; an increase in quantity upon the former produced a greatly increased amount of grass, until the evil was apparent in the opposite direction by the weakness produced in the stems being such as to cause the crops to become lodged, whilst with root crops four cwt. or even five cwt. can be used if applied with advantage, but three cwt. appears to be the quantity that may be used with the greatest advantage; and in every experiment made by myself, when not drilled, I have found the better plan to sow it and cover with a shallow ploughing a few days previous to ploughing for the depositing the seed; by such process, even in dry weather, we need not fear losing the guano by evaporation, as on its being covered in, the ammonia becomes at once fixed and, therefore, not liable to escape."

FRAUD IN GUANO.

We are not aware of any attempts in this country to adulterate guano—though much of an inferior quality has probably been imported, and it is quite probable that many farmers may have bought, unwarily, parcels of African guano, not knowing its inferiority to the Peruvian.

We should apprehend greater damage in buying other prepared manures, as well from the ignorance, as the malevolence of the manufacturer. When men, utterly ignorant of chemistry, and utterly unprepared by previous study or employments, undertake to compound manures as they would make mortar for bricks, there is room for much apprehension, and yet for *one comfort.* It proves the existence of a growing demand, and a growing habit of anxiety on the part of farmers, for the means of returning to the meal tub, something of that which they are constantly taking out of it.

In London, one agent of a house engaged in the manufacture of spurious guano, contracts for the delivery to the house of thirty tons of a *reddish loam* per week. Dr. Lindley, regretting the peculiar liability of gardeners and small farmers to be imposed on in this way, suggests what may afford a hint for American farmers, as follows:—

"What the small people—and they are the sufferers—cannot do, the great people may do for them, and effectually. One thing we would suggest is that the assistance of middle-men should in this matter be dispensed with as far as possible; and that guano be bought in the docks from the ships that bring it. It is understood that the importers deliver quantities as small as thirty or forty tons. For this purpose gentlemen would have only to notify to their tenantry that as soon as such a quantity is subscribed for, they will purchase it of the importers, and cause it to be sent to the nearest market-town, where the subscribers can each receive their quota without any addition to the first cost beyond the expenses of transit; and the middle-man's trade is gone. None but fools or lunatics would in such a case think of obtaining guano otherwise than from the local centres here proposed; for, in the first place, it would be cheaper, and in the next place its purity would be beyond suspicion.

"If this suggestion were but carried out, the trade in adulteration would fall to pieces; or it would be carried on for the sole benefit of the foreigner, who, it must be owned, is already under considerable obligations to the 'Rogues in Guano.' And we will take leave to submit that such a policy would be of more real public advantage than idle hustings speeches, or dreary parliamentary harangues, or even than abusing Sir Robert Peel."

In giving place to the above, it is but an act of sheer justice to Mr. A. B. Davis, President of the Agricultural Society of Montgomery County, Maryland, to say, that he has, with benevolent forethought, and in the most disinterested manner, rendered great service to his brother farmers in that county, by engaging large quantities of guano, in a way to ensure against adulteration, to be let out in smaller parcels to those who wanted, without a tittle of advance on the wholesale price. While such actions speak their own comment, they yet deserve to be held up as examples. But it is not for such useful services to society that Congress gives away the *public lands!* To get high pay, and privileges, and pensions, and bounty lands, and palaces, and fine furniture, and life commissions, you must possess a trade that is *sprinkled with gunpowder and smells of blood.*

By the by, we have seen it stated somewhere that a treaty had been formed with the representatives of the Peruvian Government, under which we are to be put on the footing of the most favoured nation—England, for example—as to the *right of importing guano!*—which, like some of the favours we obtain in like manner from England, is no favour at all. The truth is, that the importation of guano *is monopolized* by a single mercantile house in England, to whom the right has been sold by the Peruvian Government; and English merchants and farmers generally, can no more import guano, except through

that house, than American farmers or merchants can. If this be the fact, as we apprehend it is, the treaty can serve no useful purpose, but that easy one of—*humbugging farmers*, as they were for some years humbugged about *foreign duties on our tobacco!*—If England is honest in her professions about free trade, will her Majesty's minister, or Mr. Brown, M. P., "of Richmond Hill, near Liverpool," please inform us why she continues to levy on our tobacco an impost of about $15,000,000 a year, as much as ought to pay the whole expenses of our government, if it has not become quite vulgar to talk any longer about *our expenses!*—seeing how easy it is *to borrow*—and how wise it is "in time of peace to prepare for war," by building up immense military establishments, which, after all, oftenest lead to war, and end, as war has always done, in millions on millions of public debt—taxes, pensions, and a career in which we are running, full tilt, with all sail set.—*Edit. P. L. & A.*

HORTICULTURAL MEMORANDA FOR AUGUST.

Since our last number appeared, the weather for the Gardener has been very unpropitious, *hot and dry*. The duties of the present month are sowing seeds and destroying weeds; preparing for an opportunity of rain, to plant out celery, in rich soil freely watered. Shade the plants, when practicable, from scorching sun till rooted. Look out a rich spot for fall spinage, cabbage, lettuce and corn salad, which sow thinly in drills one foot apart. Bud roses and fruit trees of every description—first plums, then pears, cherries, apples, apricots, peaches, and nectarines. The two latter will take well in September.

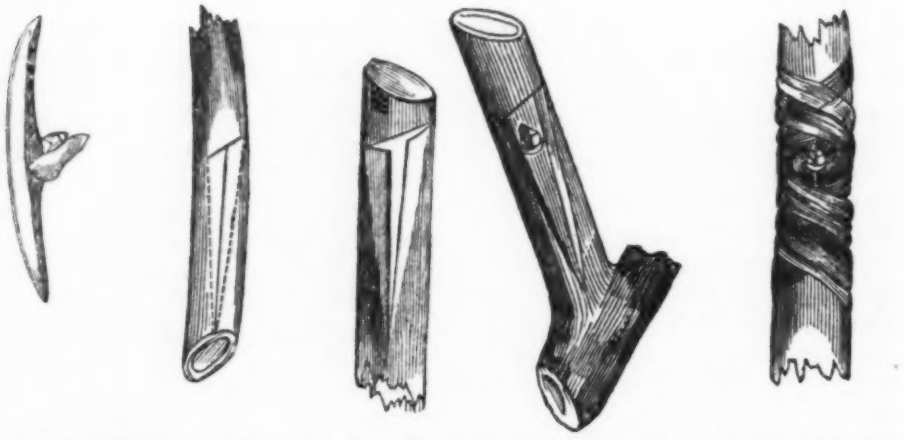
The Farmer has had glorious weather for hay-time and harvest. Wheat has suffered severely in some localities by rust and fly—whole fields not worth more than the straw, whilst others within a mile are very fine crops. Our own crop (Mediterranean) is fully an average; that after potatoes below average; that after corn, on which was sown from 2½ to 5 cwt. per acre of Guano (according to quality of the soil) is fine, straight, and heavy headed. Every person engaged in rural pursuits should be fully master of the art of budding to propagate and perpetuate any fine variety of fruit, which will at some period produce a sure and profitable crop. Although it is very generally known, yet many will take confidence, and profit by the following remarks and illustrations:—

The operation of budding may be performed with any sharp thin bladed knife, though one for the purpose, called a "budding knife," with a thin ivory handle, is preferable. It should be inserted about half an inch above the bud, and passing about one third of the way through the wood of the shoot, come out again about the same distance below it, the cut being as clean as possible. The portion of the bark in the centre of which the bud is situated, is called the shield, and when removed contains a portion of the wood; some prefer removing this carefully so as to leave merely the eye; others succeed equally well by retaining it. The argument seems to be in favour of allowing it to remain in this climate, in order to afford the bud a sufficient supply of sap, as the action of the sun would tend to dry it up before it could receive a supply from the stock. There is also greater danger to be apprehended from outward accidents when nothing but the eye is retained. The appearance of the bud at this stage of the operation with the wood removed, is shown in Fig. 1. If the wood is dry and does not separate readily, it is a sign the bud is too old, and should be rejected. When the wood is too old or too young the shield may be taken off by penetrating only one-fourth the way through the shoot, and inserted into the stock without removing the wood it contains; this method, particularly with very young shoots, is very successful.

If it should be neccessary to transport the buds to some distance, this may be safely done by cutting a portion of the shoot, and after stripping the foliage, wrap it up in damp moss, a few large leaves, or wet paper; it may then be kept for three or four days. In applying the bud to the stock an incision is to be made lengthwise through the bark (but not so as to injure the wood) about an inch in length, and this is to be diagonally crossed at the top by another incision, as shown in Fig. 2.

The thin ivory handle or back of the knife should then be used to raise the bark (as shown in Fig. 3), and the shield inserted within, gently pressing it to the bottom of the perpendicular incision. When it is properly placed, the portion of it above the diagonal cross should be cut off as in Fig. 4, and great care should be taken that it is in close contact with the wood of the stock. When this is done, bind it up with damp matting or cotton twist, all except the bud (see Fig. 5), which must be left free to the air, but

Fig. 1. Fig. 2. Fig. 3. Fig. 4. Fig. 5.



protected from the powerful action of either sun or wet; either of which would defeat the whole operation. In eight or ten days the success of the operation will be known, and in two or three weeks the bandages must be loosened, though not entirely removed. From June to the middle of September budding may be done, choosing always cloudy weather, or a few days after a heavy rain; but for limited operations any evening may be chosen, always following the indication of the free parting of the bark from the wood, for if the bark does not rise with facility it indicates a scarcity of sap, and the buds are liable to perish for want of a due supply of nourishment. The buds should always be selected from young wood. [Subscribers to the last volume will remember that this subject was illustrated by the editor in the April number, page 617.]

Obsequies of President Taylor.—Let those who wish to read or preserve an appropriate well written account of the funeral, look for it in the National Intelligencer of the 15th of July.

Among other touching scenes and incidents it makes this mention of the General's old War Horse.

"But all eyes were drawn even from this solemn sight to one still more calculated to touch the feelings of a promiscuous assemblage; it was the General's favorite horse, the far-famed "*Old Whitey*," so well known to every soldier who served under the brave old man through the perilous and glorious Mexican campaigns. He is a well-made animal, of some fifteen and a half hands in height, in fine condition, and as it seemed, with a military air. On the saddle were the holsters and inverted spurs. Poor fellow! he stepped proudly; but how would his pride have been quelled, could he have known that he now accompanied his beloved master for the last time! Yes, *Whitey!* you are surrounded by soldiers, as you were wont to be; the cannon thunder in your ear; that is a familiar sound; and near you is he whose heart never quailed and whose sword was never turned back from the fight; but, alas! he has met, at last, a foe he could not conquer, and the hand that so often patted your neck and reached you a morning token of his loving care, is cold in death, and will caress you no more!"

We owe to the kind thoughtfulness of our friend E. Whittlesey, the means of preserving a minute description of the form and points of "Old Whitey," written by J. Hildebrand, of Marietta, Ohio.

Far from losing anything, the old charger, through the force of mournful association, will have gained in the public esteem, by the death of him whom he bore on to victory, in so many battle fields, where, of both it may be said—"he mocked at fear and was not affrighted—neither turned he back from the sword." If I meet the enemy, in whatever numbers, "*I shall fight him!*" was the simple unostentatious expression of "Old Zack," when expecting to encounter a superior force.

The minute description of Old Whitey, alluded to above, was delayed in its publication, in the hope of accompanying it with a *true portrait* (such as ought to be preserved) of an animal, whose name will be connected and consecrated by history, with that of an illustrious warrior; as have been the names of Alexander and Bucephalus. A warrior, however, of far different stamp, since Taylor loved not war, for war's sake; and instead of weeping that he could find no more worlds to conquer, was even more beloved for his clemency, than he was admired for his indomitable courage. Glorious as was his victory at Monterey, even more glorious still, was that forbearance after it, which gave him a right to say, in the exulting language of Job—"The blessing of him that was ready to perish came upon me, and I caused the widow's heart to sing for joy."

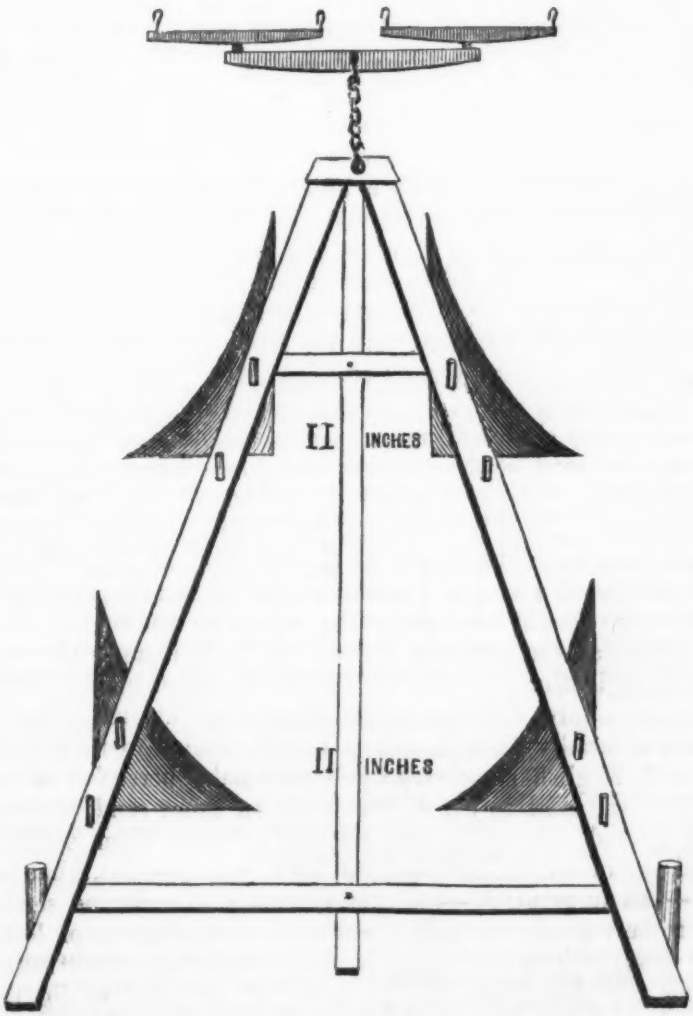
THE WORKY.

A NEW LABOUR-SAVING IMPLEMENT.

BALTIMORE, 21*st June*, 1850.

DEAR SIR—I herewith enclose to you a draft of the implement invented by me for working certain drill crops, and those planted in squares in the early stages of their growth, and I can say with great truth, that experience in its use warrants me in adding that I consider it one of the most important introductions, as a saver of labour to the farmer, that has been invented.

This implement, which may properly be named the "Worky," consists, as you will perceive by the enclosed draft, of a frame like that of the Cultivator, but *heavier*, has two forward cast bar shares, land side *inwards*, and two after cast bar shares, land side *outwards*—is drawn by two horses; it strides the drill or row, and by one operation throws the cut *from*, and back again *to*, the plant—being equal to *four* operations in the ordinary way. It does the work in the *best style* on well-prepared land, and can stride corn when knee high without injury. If desirable to pass over taller crops, it may be constructed with that view by giving more length to the leg of each bar share.



The two flat teeth are designed for use where the space between the rows may not be reached in going forward over the first and returning over the

second row. A second mortice should be made in the frame to set the bar-shares wider from the plant, where required.

Yours, very respectfully,

J. S. WILLIAMS.

P. S. Should any of your correspondents desire to have one of these implements, I will cheerfully attend to its being made here at one of our agricultural establishments.

It will cost, *complete*, ten dollars. J. S. W.

APPEAL TO AGRICULTURAL INVENTORS AND MACHINISTS.

ALTHOUGH within our personal observation, very decided improvements have been invented in Agricultural implements and machinery, there is yet a wide margin to be filled up by Yankee ingenuity. There are certain things that yet constitute great desiderata in the way of economising agricultural labour, that if needed in like degree for improvement in manufactures, or the art of navigation; and yet more especially, if required for economy and efficiency in the art of *destroying the human species*, would have been long since supplied.

See what the establishment of schools, and the application of the sciences of Chemistry and Mechanics, have done for Armies and Navies! those chronic sores, that had their origin in the ignorance and rapacity of barbarous times; coming down to us like hereditary diseases or the taint of original sin; inherent evils, that no improvement in medicine or morals can supersede.

If such a machine as that which is here called for by Mr. Croom, had been as long and as obviously needed to save the tedious labor of *chopping* with a hand hoe, over entire fields of hundreds of acres; if, we say, such an implement had been as long needed in other departments of industry, it would have been long since forthcoming. What would such an invention be in point of ingenuity, compared for instance, with the process of weaving an entire carpet, employing threads of every variety of colour, at a single operation?

By the by, we lately saw in an English paper, an account of the application of steam to *working the land;* not by *ploughing*, but by a revolving machine, to which was attached blades that worked like so many revolving *spades;* rather *digging* than *ploughing*, which, by the way, is much the more effectual process of the two. Now it strikes us, that such a machine, to go by horse, if not by steam power, might answer by the *omission*, at certain fixed distances, of the hoes or spades, where it was desired that the cotton plant should remain untouched. We should have given what was there said of this machine, were it only to belay, as the sailor says, what has been done in the way of applying steam to agriculture, hoping for further improvement, if needed, were it not that we are aware of the prejudice which exists against *foreign* inventions and devices, especially English, as not being "suited to our country," except the devices of English commercial policy to make herself "the workshop of the world:" the mill to which every nation must send, not exactly their corn to be ground—we have so far released ourselves from English thraldom, as to grind our own corn, and shoe our own horses;—but, what is worse only in degree—not in principle—she yet contrives to make us send our cotton and wool to be wove in her mills; and as for iron, instead of letting us send that to be wrought into bars and rails, she contrives with the "lullaby, lullaby, baby" song of "free trade," to persuade us not even to dig the rude ore from the mine; but to import millions of her beef and potatoes, in the form of iron, ready to be laid down through our coal and iron regions. Ah, what a wise, provident people we are! How much better and more submissive to mo-

ther England, thus to forego the use of our own materials, than undutifully to fly in the face of Mr. Bulwer's warning not to "offend British public opinion." She, all the while that she sings to her daughter the lullaby song of free trade, taxing a single one of our staples—tobacco—as much as we expend on all our army and navy, about $15,000,000, and quite as much as we *ought* to expend in the whole administration of the government.

We confess, however, with sorrow, that having no genius for invention, nor eye for machinery, we yet take pleasure in presenting the following offer.

We trust it will have the effect of setting our Machinists, Page, Maynard, Hussey, Ruggles, Nourse, Pennock, and others, to *thinking* at least. The premium offered, while it indicates the liberality and public spirit of the writer, bears no comparison to what would be to the inventor the value of such a machine; provided, he can promise himself immunity against *piratical depredations*, such as were committed against WHITNEY, the inventor of the Cotton gin, turning the blessing he contrived for his country into a curse for himself —the too common fate of inventors and benefactors of their country— and not the less to be apprehended now, that the crime of piracy is getting to be fashionable and popular, and men who in times past would have been hung wherever caught, as the common enemies of the human race—*hostes humani generis*—are softly styled "adventurers!" as much as to say, go where you are not called for, and if you succeed by the plunder and bloodshed of unoffending people, you shall be applauded to the echo as heroes; but if caught *flagrante delicto*, you shall have our sympathy; and if hung, as all pirates should be, we can say, let us avenge the blood of a free born American—let us unfurl the star spangled banner—in a word, let us again be plunged into all "the pomp and circumstance of glorious war;" and as for the expense! why the Farmer and Planter can pay that—they never examine into the bearing of the laws on their interests—the very suggestion of such a thing is unseemly, particularly in an agricultural paper, which should abstain from politics. Were not Farmers and Planters made, like their flocks, to follow their bell-wethers and —— be shorn when their shepherds please?

GREENSBORO', GREEN COUNTY, ALABAMA, *June* 3, 1850.

MR. EDITOR—My only apology for this communication is that your subscribers in Alabama are so few, that you are not likely to be troubled with many more such feeble articles. My object is simply to offer the amount of $200 to any one of your ingenious subscribers or others, who will furnish me with a machine to go by horse-power, for *chopping out cotton*, as such a machine is very much needed in the South, and as yet I have heard of no invention of the sort; therefore, I will give the above amount to any one who will invent such a machine, and secure to me the patent right for the State of Alabama; or twice the amount to any one who will invent it, and give to me the exclusive right, and I will have it patented, &c. As many of your subscribers are doubtless ignorant of the cotton plant altogether, I will make a few explanations in regard to the seed, planting of them, and cultivating of the same, so that I will be better understood. The seed is about the size of a common cow pea. The "beds" upon which they are planted, are thrown up with a turning plough, and are made from three to five feet in width. They are opened with an implement called a cotton opener, which is a rod of iron about an inch square, attached to a stock and drawn by a horse, and penetrates the bed about an inch and a quarter, which makes a small drill, and in this the cotton seed are planted or sown, at the rate of one bushel to two and a half per acre. After they come up well, that is after they attain the height of two or three inches, the hands begin with the weeding hoe, and chop it out, cutting out as much as twelve inches at each lick, and with this instrument an acre, or acre and a half, is as much as one hand can cut out per day. The cotton being crowded in the drill, the object in thinning it out is to let it grow off immediately: it is planted in that way to secure a good stand. Now my idea is, to get a machine to be pulled by a horse, so that one hand and a horse can take one row at a time and chop out ten acres per day; or it might, I should think, be so constructed, that the man and horse might walk between the rows in the "water furrow," and let the machine take two rows at a time, and cut out twenty acres per day; though either way would answer the purpose, so that it cut the cotton clean every twelve

or eighteen inches, leaving three or four stalks between each cut. If a pair of scrapers could be constructed, to scrape the grass from the cotton on each side of the drill, it would still be better. JOHN L. CROOM.

STATISTICS INTERESTING TO EVERY FARMER.

BALTIMORE, 15*th June*, 1850.

JNO. S. SKINNER, Esq.

Sir—Please accept a Chapter on Statistics. I have just been favoured with a copy of the Report of the Secretary of the Treasury on the Commerce and Navigation of the United States.

This document was communicated to Congress earlier than usual, as the termination of the fiscal year now gives the secretary five months to prepare it before the meeting of Congress; but why should six months be required to print it?

It relates to the great foreign trade of the country for the fiscal year ending 30th June, 1849.

The information is of great interest, and would have saved the country much if promptly published; but coming to light from one to two years after the occurrence of the facts to which it relates, it comes like an old almanac—a dull history of the past—but too late to profit withal.

The statesman needs this information to instruct him in legislation, and the merchant requires it to guide him in the questions of how he shall employ his ships, and what he shall export and what he shall import, and save him from the loss resulting from ordering merchandize to a market already overstocked. Not only are merchants in the dark for want of statistical information, but the absence of such information enables designing speculators to impose on the public. The article of *coffee* affords an illustration. No doubt the crop of coffee was short, but the deficiency was shamefully exaggerated, and speculators succeeded in nearly doubling the natural price. But they overacted their part, and advanced the price so high that the consumption fell off, and the price declined more rapidly than it rose—and fortunes were made and fortunes were lost. Coffee deserves to be noticed by a separate article, and is now only brought forward for the purpose of saying, that under a proper system of statistics the general public would not have been imposed on to such an extent.

You know what the proper system is, and you would render good service by making the emergency apparent at Washington. We borrow much from England—let us adopt her plan of statistics. Let there be a bureau devoted to this object—and, as in England, let the results be *published monthly*, independent of Congress and independent of Congressional printing—then the *farmer*, the *merchant*, and the statesman can see what is passing—may see how their respective interests are affected, and govern themselves accordingly.

My views may be illustrated further by an important item in this report. During the year ending the 30th June, 1849, there was imported into the United States in various forms no less than 324,687 tons of iron, which is almost *one thousand tons each day;* and besides all this, cutlery and hardware or manufactures of iron not specified to the value of 4,542,991 dollars (the weight of the iron not being reported).

Need we wonder that the iron establishments of the country are falling one after another into ruin? Need we wonder that of the thirty-three blast furnaces in little Maryland, which were formerly in full operation, diffusing nothing but good to the farmer and labourer, are now all as silent as the sepulchre—all except some four or five, which linger out a miserable existence.

These excessive imports, now so lately made known officially, will also account for the fact that of six hundred furnaces in the State of Pennsylvania, *two hundred and seventy-five are now in the hands of the Sheriff*, and of three

hundred and twenty iron forges, one hundred and six are likewise in the Sheriff's hands. But how does this apply to the question of statistics? It applies thus. If these astounding facts had been known to the Iron masters, they might have saved at least one year of toil and anxiety, and have made a better dividend for their creditors. If such be the imports of the year ending the 30th June, 1849, what has been the importation of the year which followed, that is the year just ended?

The secret will be revealed officially next June, a year hence. But we want the information now—and now it would be more useful than at any other time. In the absence of official reports we must estimate; and taking a wide latitude, I venture to predict that the importation of Iron in its various forms will amount to between 400,000 and 500,000 tons, and that the Cutlery and Hardware will amount in value to five millions of dollars in addition.

This estimate is predicated upon the knowledge of the general stoppage of the rolling mills, which were engaged on railroad iron in this country, and the notorious heavy imports of railroad iron, and also the continued decline of prices in England. The Baltimore and Ohio Railroad Company are now receiving iron at £5 10*s.* the ton; but the same article, when the steamer Asia left, could not be delivered free on board at 20*s.* less, viz. £4 10*s.* And pray what is £4 10*s.*? Why it is exactly twenty dollars! Hence I repeat, that the importations of iron are probably at this moment at the rate of 500,000 tons per annum, exclusive of hardware and cutlery. Being not less than the prodigious quantity of 1300 *tons a day.* Enterprise nowhere abounds more than among Iron masters—but no enterprise can resist such an importation. If the foreigner would insist on having *cost* for his iron, there might be some hope; his railroad bars cost him more than twenty dollars a ton, yet he will sell them at that price, perhaps calculating, as well he may calculate, that he thereby places the extinguisher on the six hundred blast furnaces of your State of Pennsylvania, and when their fires have gone out, the Iron works of the other States may be considered as doomed.

I know it is an Agricultural Journal you publish, but you have a corner for the Loom and the Anvil, and the farmer has a direct interest in the Iron question. Ask the Pennsylvania farmer what becomes of the operatives who are discharged from employment, when the six hundred blast furnaces, the three hundred and twenty-five forges, and the numerous rolling mills and foundries are silenced? They have no alternative than to become tillers of the soil—they are compelled to abandon the chopping of wood, digging of ore, and mining of coal, and they become the rivals of the farmer, instead of continuing his customer and the consumer of his products. He raises his own provisions and buys comparatively nothing. And this applies to the whole business of life. If it be the will of the people that the manufacturing interest must be abandoned and our workshops be transferred to Europe, then all must turn farmers. True it is, there may be a want of consumers and a want of a market, yet the labourer may live, and to live—to vegetate—is all that the artisan of our country can now hope for: his talent is handicraft—his acquisition of a trade or art, the result of a long apprenticeship in youth, and much experience in maturer years, is lost to him and to the country, and to live, he is compelled to resort to pursuits for which he is not qualified by experience and habit, and in a department already overdone, as the statistics of the season just passing would show, if such statistics could be had. But this would lead to another branch of our subject, and though the Treasury Report, which has inflicted this article on you, comes late, yet there is much to be learned from it, and if the present communication be acceptable to you and your patrons, I will ask the favour of being further heard.

NOTE BY THE EDITOR.—Not only is it acceptable, but, as many of our patrons in the South and West have said, on seeing this Journal, "It's the very thing we wanted"—something that would show to the planter and farmer that they have something to learn besides the time to sow and the depth to plant, the time to cut and gather, and how to cure and feed. The first thing that agriculture needs, is *steady and remunerating demand;* and the way to ensure it, those who are employed in manufacturing what we want, must be here upon the spot, where we have the materials for such manufacture in abundance, and where they will be certain to demand, and able to pay for what the cultivator of the *soil has to sell!* secure for the product of fields, and orchards, and gardens, and forests, and mines, that *certain demand*, and then you will have laid a broad and solid foundation for all sorts of improvement, and not until then, resort to what *expedients* you may. You might as well expect to revive a drooping field of 1000 acres of corn, expiring under a withering, intense drought, by watering a few hills here and there—one out of ten thousand—as to retrieve the declining agriculture of a country by offering a few $5 premiums for the best pigs or potatoes. You must have *thick population and diversified employment at home*, and that is not to be had by letting in Canada wheat and English iron and cloth. We verily believe, that were it not that party prejudice, and the love of power and office, overrides all other considerations, there would not be found one legislator in the Union who would hesitate to give adequate protection to American labour. Yes, we say again to our correspondent, your communications are acceptable; but we wish you always to show the connection of the questions discussed *with the interests of agriculture*, for *that*, after all, is the great interest we have in view. —*Ed. P. L. and A.*

ROSWELL HOUSE—PATERSON, NEW JERSEY.

WE have again had the pleasure of a sojourn of some days, at Roswell House, New Jersey, and took the opportunity to look more particularly into its beauties and its products; its extensive plantations of ornamental and fruit trees; its shrubbery and flowers of infinite variety; its fine milch cattle—its rich dairy and beautiful land and water poultry. Of all these we may beguile a leisure moment for ourselves and readers, if we can ever find one, by writing out our "notes."

What would the reader think, for instance, of forty kinds of grapes under glass, and six American in open air; some of the former in a state of delicious maturity, for present table enjoyment; apples, pears, cherries, in vast variety; quinces, plums, peaches, apricots, nectarines; near 1000 ever-green trees, with several hundred deciduous ornamental, and over 1200 fruit trees? Five acres are covered by spring water, from four to ten feet deep, as play-*grounds* for the majestic swan and watchful babbling goose! But we have no time for particulars. Happy would it be for society, were the taste of all men who have the means to run thus into fondness for things that tend to agricultural and horticultural improvement! to the embellishment of a country, and the refinement of its people.

We left just in time to *not* witness the arrival of the *Hungarian cattle;* a young bull and heifer, of a pale mouse colour, which cost in Hungary, - - $112 50

Expenses to Bremen, - - - - - - - -	231 05
Food *for the voyage*, - - - - - - - -	30 00
Freight, - - - - - - - - - -	50 00
Total cost at New York, - - - - - -	$423 55

These are cattle of the breed described by Mr. Fleichman, in the Patent Office Report as quoted in our last number.

Mr. Colt has desired his friend, General Devereux, to procure, through the kind assistance of Col. Le Coteur, another Jersey or "Alderney" cow.

At our instance, his worthy and intelligent manager, Mr. Fische, had two lots of hay, cut while we were there, measured:—

Result.—Pure timothy, 2¼ acres yielded 6¾ tons.

Timothy and clover mixed, 6¼ acres yielded 21¼ tons.

This, it must be admitted, is "hard to beat," but was beaten, nevertheless, by a lot of seven acres and one hundred rods, connected with the beautiful residence of H. W. Clapp, Esq., at Greenfield, Massachusetts, which last week yielded twenty-nine tons, four hundred and ninety-seven pounds, or over four tons to the acre, of hay, "cut and housed in beautiful order." How many candidates will there be for the premiums of agricultural societies, for crops less than these?

How striking the contrast, between taste like this and that loathsome and eternal anxiety betrayed by some millionaires, to heap dollar upon dollar, for no earthly object but to gratify the loathsome pride of being accounted rich, while they leave even near relatives to pine in hopeless poverty, under providential afflictions!

BRITTON & PARSELL'S

ONE PRICE CLOTHING WAREHOUSE,

No. 90 FULTON STREET, NEW YORK.

JOHN P. BRITTON, WM. W. PARSELLS.

CONSTANTLY ON HAND, A GOOD ASSORTMENT OF

CLOTHS, CASSIMERES AND VESTINGS,

Which will be made up at the shortest notice, on the most *reasonable terms.*

P. TRAINOR,

LATE THOMPSON & TRAINOR,

SADDLE AND HARNESS MAKER,

AND

IMPORTER OF ENGLISH SADDLERY,

No. 189 BROADWAY, New York.

☞ Great care will be taken in fitting horses. ☜

A GREAT CHANCE FOR AGRICULTURAL MACHINISTS.

J. S. SKINNER, Esq., Editor of "The Plough, the Loom, and the Anvil."

La Caché, Miss., June 15, 1850.

I want to offer, through your invaluable Journal, the largest fortune ever made, to any mechanic who will invent and apply a machine on a large scale to gin and spin cotton at the same time. This is done in a small way by Pearce's spinning jenny—but what we want is its application on a scale sufficient to work up a crop. Can it be done? I have no doubt of it. The man who puts in operation such a machine will make the largest fortune ever made by a mechanic.

Yours truly, SAMUEL COBUN.

TO OUR READERS.

You will observe that such is our desire fully to meet our engagements with you, that we are constantly giving fuller measure than we promised. This month sixteen pages are added again, which greatly increases our expenses. We do it because we are desirous to give a full quantity of *practical* matter. The politico-economical portion has been swelled in reference to the state of the country, and to great measures which ultimately affect practical agriculture, much more than a superficial observer would perceive.

By the time this volume is half out, we shall have closed the publication of Mr. Carey's Letters to the Secretary of the Treasury, which of themselves will form a work on the political economy *of agriculture*, of inestimable value to every cultivator who will study them. The Essay in this number on the Manufacture of Cheese alone will be esteemed an equivalent for his subscription by the northern reader, while wheat-growers everywhere will value in like manner the letter from Col. Goldsborough.

☞ Our exchanges will please send their papers addressed to the AGRICULTURAL ADVERTISERS and not to the "Plough, the Loom, and the Anvil."

NEW SUBSCRIBERS to *The Plough, the Loom, and the Anvil*, are requested to bear in mind, that *they* can have the two previous volumes, paper binding, for $2 00 each, to be sent by mail, or they can have them *well bound*, the two for $5 00.

PENNOCK'S PATENT SEED AND GRAIN PLANTER.

FOR PLANTING

Wheat, Rye, Barley, Indian Corn, Rice, Oats, Beans, Peas, Ruta Bagas and Turnips.

This machine can be regulated to drop any quantity per acre, at whatever depth required, and operates equally well on all kinds of land. It is so constructed as not to be injured by coming in contact with rocks, roots, &c. For simplicity, durability, and economy, it is unsurpassed by any other agricultural implement in use.

Price $100. A liberal discount allowed to Agents.

READ THE FOLLOWING.

Previous to harvest, we had five acres carefully measured with the chain and compass by W. Pennington, the surveyor of the neighborhood, assisted by John Jones, who saw it all cut, threshed and measured separately, with the following results:

Nos. 1 and 2.—Two acres of broadcast, surveyed together—two bushels of seed to the acre—seventy-five shocks—fifty five bushels of wheat, or 27½ bushels to the acre.

No. 3.—One acre drilled, adjoining the above, the land, if any different, rather inferior; treated exactly alike—one bushel and one peck of seed to the acre—forty-two shocks, thirty-five bushels.

No. 4.—One acre drilled a little distance from No. 3, one bushel and one peck of seed, forty-two shocks, thirty-five bushels.

No. 5.—One acre drilled a little distance from No. 4, one bushel and one peck of seed, fifty shocks, forty bushels to the acre.

Here we see that by the use of the drill alone (the soil being in the same, or perhaps an inferior condition), the crop was increased seven and a half bushels per acre, and adding the amount saved (three pecks), make eight bushels and one peck to the acre; and further, that the amount of straw to the drilled acre, with a smaller quantity of seed sown, increased twelve per cent., and the amount of grain on the same acre was increased more than twenty-seven per cent. * * * * * * The drill used was invented by M. PENNOCK & SONS, of Kennet Square, Chester County, Pennsylvania. Respectfully,

Philadelphia, 10th Mo., 1844. CHARLES NOBLE.

Unionville, Chester Co., Pa., Feb. 8th, 1848.

I do hereby certify that I have used one of Pennock's Patent Drills for five years, and have put in from fifty to seventy acres of wheat for myself every year since, and have never failed having a good crop. I think I can safely say that I have realized from 30 to 50 per cent., or that it has averaged me from $300 to $400, and even $500 a year over the usual broadcast seeding. My land being low, I have lost greatly by the winter throwing the roots entirely out, which is wholly obviated by drilling. I would not take $500 for my Drill if I could not get another of the kind. JOHN HUEY.

Reedville, Mifflin Co., Pa., July 21st, 1848.

I hereby certify that, previous to harvesting, I measured one acre of wheat carefully, as follows: half an acre which had been drilled in with one of your machines, one and a quarter bushels of seed per acre—also half an acre broadcast, from one and three quarters to two bushels of seed per acre, and when cut and threshed, measured as follows:—the half acre drilled wheat thirteen shocks, measured twelve bushels and two quarts. The half acre broadcast eight shocks, measured seven bushels, eighteen quarts. The quality of the land exactly alike, and treated alike previous to sowing the seed. ABNER THOMPSON.

We, the undersigned, were present, saw the land measured, cut the grain, and assisted in threshing the same, and believe the above statement to be correct.

JAS. REED, ALEXANDER REED,
H. G. MORRISON, WILLIAM STEELY,
D. C. MILLER, GEORGE ASHBY.

The subscribers manufacture, and keep constantly on hand, the above machine, together with a general assortment of agricultural implements, such as Ploughs, Horse Powers, and Threshers, Hussey's Reapers, Horse Rakes, Corn Shellers, Fanning mills, &c. Also, Pennock's improved Lever Jack, for raising carriages and wagons; together with steam engines and mill work of every description.

Having an Iron Foundry in successful operation, they are prepared to furnish castings of superior quality at short notice. S. & M. PENNOCK.

Kennet Square, Chester Co., Pa.

Shirly, Va., Nov. 5th, 1849.

MESSRS. S. & M. PENNOCK. * * * * I have used your Patent Seed Drill, and do consider it the most simple and perfect, as well as most complete labour-saving machine I ever saw. It does the work in our lower James River county, of 14 harrows, 12 horses, and 5 good men—(one of them a good seedsman,) with only 3 harrows and 2 smart boys. I am determined to have two of your Drills by next season if possible. * * * *

Most respectfully, yours, &c., HILL CARTER

PRICES OF COUNTRY PRODUCE IN THE GREAT MARKET OF NEW YORK—THE LIVERPOOL OF THE UNITED STATES.

We are not yet satisfied to what extent our patrons would be pleased to have a page or two occupied with prices, which, though not exactly correct at the moment it reaches them, may yet serve as a general standard. We will continue yet for some numbers to give them, and until we can learn that the space might be occupied in a manner more acceptable to our readers. We shall be indebted, as heretofore, to that great repository of everything connected with the trade of New York, the *Dry Goods Reporter*, whose office is our place of business when there, and where orders may be given for what relates to *The Plough, the Loom, and the Anvil.*

Coal.—Our market continues dull. There is but little foreign arriving. We note sales of a cargo of Sidney *a* $5 50, 60 days, and one *a* $5 75, 4 months; also 100 chaldrons fine Pictou *a* $2 50, cash.

Cotton.—The receipts at all the shipping ports have declined 600,000 bales as compared with this time last year. The exports at the same time have fallen off 792,000 bales, and the stock has increased 127,000 bales.

In Liverpool, we learn by the Hibernia, that the stock on the 28th June was 520,000 bales against 787,000 bales in 1849, being a decline of 267,000 bales. At Havre, the stock is twice as large as last year at the same time.

The sales of the week amount to 8000 bales, the largest quantity being made on Thursday, when the last concession of an ⅛c. was made, and 1600 to-day.

	Atlantic ports.	Gulf ports.
Inferior	none	11 *a* 11¾
Ordinary low to good	12 *a* 12½	12 *a* 12½
Middling low to good	12½ *a* 13	12¾ *a* 13⅜
Middling fair to fair	13¼ *a* 13⅜	13¾ *a* 14¼
Fully fair to good fair	13¾ *a* —	14¼ *a* —
Good and fine	none	none

Flour and Meal.—The stock of common state is large, but is in the hands of few houses and not offered freely, and generally held much higher, which has given additional buoyancy to the market, and prices have improved 18¾ *a* 25 cents per barrel. The break in the canal has restricted the sales somewhat, and buyers for time sales have found it difficult to pick up lots to fill their contracts. Much of the common state is rejected, so large a portion being sour. The better brands have been in request, and prices are firm and stock reduced. The sales of domestic aggregate 25,600 barrels *a* $4 25 *a* $4 44 for sour; $4 25 *a* $4 37½ for fine; $1 25 *a* $1 62½ for No. 2 superfine; $5 00 *a* $5 06¼ for old common state (good); $5 18¾ *a* $5 31¼ for common to straight state and mixed Ohio, Indiana and Wisconsin; $5 37½ *a* $5 75 for mixed to fancy Michigan; $5 31 *a* $5 44 for favourite state; $5 87½ *a* $6 for fancy Ohio; $6 *a* $6 12½ for extra Ohio; $6 12½ *a* $6 18¾ for Genesee.

Rye flour has varied but little and has been moderately active. The sales sum up 27,000 barrels *a* $2 87½ *a* $3, closing steady *a* $2 87½ *a* $2 94.

Corn meal has ruled firm with a fair demand for the West Indies. The sales are 1000 barrels Jersey *a* $2 87½ *a* $3, the latter for very good, and 500 barrels Brandywine from store *a* $3 25. Puncheons are dull *a* $15.

Grain.—There is no new as yet on the market, but we understand it is hourly expected from North Carolina and Virginia. The sales are 2,200 bushels red and mixed Jersey at $1 24 *a* $1 25; 2000 bushels fair white Pennsylvania at $1 25, and sundry small lots of good and prime Genesee within our quotations. Rye has been in request, and has improved slightly, with a fair demand for distilling, in part to arrive. The sales are 17,500 bushels at 61 cents in the slip, early in the week, and at the close, 62½ *a* 63 cents delivered, including in the sales about 10,000 bushels to arrive soon at 62½ cents. Black-eyed peas have been in fair request, with sales of 200 bags at about $2 25 per bag of two bushels. Canadian peas are quiet at quotations. Corn since this day week has been in fair demand for the East, and export, and for filling contracts, also a good speculative demand may be noticed, which together have carried up prices 3 *a* 4 cents. The market has been influenced by the break in the canal cutting off supplies, and the pressing wants of the trade to fill up vessels stimulating the prices. The sales aggregate 170,000 bushels, closing nominal at 62½ *a* 63½ cents for Western mixed, 63½ *a* 64 cents for flat yellow, and 64 *a* 64½ cents for Northern and Jersey yellow. Included in the sales are 25,000 bushels Western mixed, on board ship for Liverpool, at 62½ cents. We hear, in addition, that a large speculative movement is on foot, reaching 100,000 bushels, for August delivery, at about 62 and 63 cents for Western mixed.

Hay.—The arrivals have been light, and prices have improved, with a good shipping demand, and sales of 3000 bales at 62½ *a* 70 cents. New is more plenty and is selling at 65 *a* 75 cents per 100 pounds cash.

IRON.—The sales are confined to Scotch pig, which is in steady demand at $19 50 *a* $20; and about 500 tons have changed hands. Other descriptions are entirely quiet. Prices are steady and show no disposition to advance, as stocks are yet considerable both here and in Great Britain.

LIME.—The supply has increased and prices are easier; sales of 5000 barrels at 70 and 65 cents for common Thomaston, and 95 and 90 for Lump.

PROVISIONS.—There is no diminution in the stock; the receipts are light. There is a better inquiry for refuse, and we note large sales of Sour Mess at $9 81½ *a* $9 87½; and Prime at $6 50 *a* $6 75; Rumps $8 25; and short Shoulders at $7 50 *a* $7 75. The sales aggregate 4400 barrels (including the above) at $10 50 *a* $10 62½ for Mess; $10 12½ for soft Mess; $10 *a* $10 12½ for thin Mess; $13 for clear; $14 for do. in half barrels; and $8 50 *a* $8 62½ for Prime. Beef has been in better request since our last, and prices are rather easier; the demand has been principally confined to good city or extra Western. The sales reach 1200 barrels at $5 50 *a* $6 50 for Prime; and $8 50 *a* $10 50 for Mess—the latter price for extra Chicago. Prime Mess has been in request, with sales of 300 tierces at $17. Beef Hams have ruled dull and heavy; sales of 60 barrels Western at $13. Cut Meats are easier and in rather better demand. Sales of 50 hogsheads ordinary Hams at 5½ cents, 30 hogsheads State at 6¼, and 50 hogsheads dry shoulders at 3¾ cents, and 183 tierces pickled do. at same price.

SEEDS.—There is some speculative demand for old Clover, and we note sales of 60 to 70 barrels, two and three years old, at 5½ cents cash; prime is scarce. Of Flax Seed the market is bare. At the fire in Brooklyn this week, about 35,000 bushels Calcutta Linseed was destroyed, equal to about 70,000 gallons oil.

SUGARS.—The market has been very active this week; considerable sales have been made, full prices have been obtained, and the market closes with great firmness. Over 3000 hogsheads have been sold, principally Muscovado, at 5 *a* 5⅝ cents, for Cuba Muscovado, 5¼ *a* 5¾ cents for Porto Rico, and 5½ *a* 6 cents for New Orleans. Box Sugars have sold freely: 5000 boxes Brown Havana changed hands at 5½ *a* 7 cents. Stocks, are small.

TALLOW.—A better home demand may be noted, with sales of 90,000 pounds prime mostly city rendered, at 7 cents, cash. There is but little Western here.

TOBACCO.—The market has been but moderately active during the week. Prices, however, of all kinds are well maintained. The sales of the week aggregate about 300 hogsheads Kentucky, at 6¾ *a* 8½ cents; 140 hogsheads Maryland, at 3¾ *a* 5½ cents; 30 Virginia, 6¼ cents; and of foreign, 190 bales Cuba at 21 cents; 50 Havana, 130 cents.

COTTON MANUFACTURERS.—It appears, that as late as 1820, the whole importation of cotton into England was but 426,046 bales, whereas in the year ending 1st September, 1849, the American manufacturers alone took 531,972 bales, and, under the tariff of 1842, they would, by this time, have taken a million.

The *Philadelphia Daily News* says, as to

THE WOOL MARKET.—The condition of the clip of Washington county wool this season, is represented to be uncommonly good, and several fine lots have been disposed of at from 50 to 60 cents per pound at Pittsburgh, which is a high figure.

WOOL.—The *Dry Goods Reporter* says: We learn of actual transactions to the extent of 80,000 pounds Fleece, at 31 cents, for Canada; 36 *a* 37 cents for medium, and 37½ *a* 42 cents for ¾ blood and decidedly fine; also, 30,000 pounds pulled at 30 cents for lamb's, 40 cents for old super, and 42 cents for extra super.

We quote:

American Saxony fleece,	43 *a* 45
full blooded Merino,	39 *a* 41
½ and ¾ Merino,	35 *a* 37½
Native and ¼ Merino,	30 *a* 34
Super pulled Country,	35 *a* 37
No. 1 pulled do.	32 *a* 33
Super pulled City,	32 *a* 33
No 1 pulled Lambs,	33 *a* 34

NEW BOOKS—Since our last. Among these—one of the most interesting is a copy of "THE BOOK OF CAGE BIRDS," by HENRY B. HIRST.—Third edition.—Of this now scarce work, Mr. Peterson has purchased what remains of the last edition from the widow of Mr. Duke, the publisher.

We have only had an instant to glance at what the author says of our favorite, the Jenny Lind of the feathered tribe, the American MOCKING-BIRD, commonly called the *English* Mocking-bird, as another sign of colonial subserviency. In describing this sweet bird of universal genius in his way as "the Shakespeare of Nature—and his genius never sleeps"—the author equally compliments the poet and the bird. But how could

he speak of its being "so highly appreciated in Europe?" Who has succeeded in getting them to Europe? Mr. Jefferson tried in vain to send them to his friends in England. Our own was the only successful effort we know of in sending one which arrived safely at La Grange to General Lafayette, and one of the means was a good provision of the *worms* found in flour, obtained at a mill near Baltimore. The most appropriate description of the Mocking-bird—one which corresponds with its own enthusiasm, is *Wilson's*. It may be said of the naturalist as of the poet—*Nascitur, non fit*—and Wilson was born a naturalist.

All old maids and old bachelors who substitute birds for children, ought to hasten while they can, to get the "Book of Cage Birds."

The *teachability* of birds is beyond all belief, if we may credit what we have lately seen stated. It is said that a young lady, residing with her family at Toulouse, amused herself by collecting birds and teaching them to perform feats, gradually advancing in interest and difficulty according to the aptness of the pupils. After a curriculum of four years, so far had the limits hitherto assigned to bird-intelligence been exceeded, that the preceptress was advised to remove so learned an establishment to Paris. Among other accomplishments they learned to tell the hour on seeing a watch, and to spell words by selecting the proper letters from the alphabet. "Truly there are more things in this world, Horatio, than are dreamed of in our philosophy."

Then we find on our table:—

Gray's Botanical Text Book, Third edition, rewritten and enlarged, pp. 520, New York, Geo. P. Putnam. This is a standard work of great excellence in its way, and of which, for the benefit of our readers, we shall hereafter take more than a passing notice.

The Vale of Cedars, by Grace Aquilar, pp. 256, New York, D. Appleton & Co.

Norman Leslie, a Tale, by C. G. H., author of the "Curate of Linwood," "Amy Harrington," &c. pp. 286, New York, D. Appleton & Co.

Woman in America, Her Work and Her Reward, by Maria J. McIntosh. No one who has read "To Seem and To Be," "Charms and Counter Charms," &c. will fail to possess himself of this little volume; it is also published by the Messrs. Appleton.

Besides these we have a number from that great establishment of the Messrs. Harpers in New York, the wonder of the age, which we shall notice hereafter, not having them before us at the moment—but speaking of this great Book-mill, we ought to say they never grind any but the *purest wheat*—free alike from garlic, cockle, and *smut*, and all offensive matter.

PHILADELPHIA COLLEGE OF MEDICINE,

Fifth Street, South of Walnut.

The Winter Course of Lectures for 1850 and '51, will be commenced on Monday, October 14th, 1850. The General Introductory will be given by Dr. James McClintock. Degrees will be conferred early in March.

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The fee for the respective tickets may be paid to each member of the Faculty—the whole amount may be paid to the Dean, who will issue a certificate which will entitle the student to the ticket of each Professor.

The Spring Course, for 1851, will commence about the 15th of March, 1851. Degrees will be conferred about the 16th of July, 1851.

For further information, inquire of

JAMES McCLINTOCK, M. D., Dean,
No. 1 N. Eleventh St.

Philadelphia, June 18, 1850.

SUBSCRIBERS TO THE PLOUGH, THE LOOM, AND THE ANVIL, from 15th May to 15th July—coming, as will be seen, from "*Nova Scotia*" to "*California*," and 18 intervening States—New York taking the lead, and the Old Dominion, the head-quarters of "free trade," the next, exceeding even Pennsylvania.

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